# OPERATOR'S MANUAL

# SPIN / RELIEF
# REEL MOWER GRINDER

## RG5500


FRONTIER EQUIPMENT™

This book consists of three manuals:

The OPERATORS MANUAL in ENGLISH which contains all the information on operating and doing routine daily maintenance on this equipment.

The ASSEMBLY and SERVICE MANUAL which is used by the maintainence department to install the equipment and to do all maintenance except routine daily maintenance.

The OPERATORS MANUAL in FRENCH which is the same as the English version only translated into French.

(REV. 6/20/2011)

## DEALER PREPARATION/INSTALLATION CHECK LIST

Frontier RG5500 Spin/Relief Reel Mower Grinder

THIS CHECKLIST IS TO REMAIN IN OWNER'S MANUAL

It is the responsibility of the dealer to complete the procedures listed below, then review this checklist with the customer upon the delivery or the sale of this equipment.The installation training goes over the basic operational functions of the equipment. To ensure adequate training, we require that the following items are reviewed by your John Deere Dealer. Please check off to ensure that you understand the following items before the installation training is complete:

- ☐ 1. Equipment is completely assembled
- ☐ 2. All shields are in place and in good condition.
- ☐ 3. All decals in place and readable. (See pages)
- ☐ 4. Overall condition good (i.e. paint, welds, electrical)
- ☐ 5. Verify there is sufficient electrical power to operate the machine.
- ☐ 6. Review Operators, Assembly & Service Manuals, and any additional training material if available.
- ☐ 7. Review proper positioning of reel
- ☐ 8. Explain use of reel grinder relief mechanism
- ☐ 9. Review traverse proximity switch positioning
- ☐ 10. Explain use of reel grinder alignment gage
- ☐ 11. Explain reel grinder spin speed vs. quality
- ☐ 12. Discuss reel grinder set-up chart in manual
- ☐ 13. Review General Maintenance

Dealer's Signature _____

Purchaser's Signature _____

## Safety

IMPORTANT SAFETY MESSAGE FOR OWNERS/OPERATORS OF REEL GRINDERS

Safety is a primary concern in the design, manufacture, sale, and use of reel grinders. As manufacturer of reel grinders, we want to confirm to you, our customers, our concern for safety. We also want to remind you about the simple, basic, and common sense rules of safety when using a reel grinder. Failure to follow these rules can result in severe injury or death to operators or bystanders.

It is essential that everyone involved in the assembly, operation, transport, maintenance, and storage of this equipment be aware, concerned, prudent, and properly trained in safety. Always use proper shielding as specified by the manufacturer.

Our current production machines include, as standard equipment, guards or shields for the grinding wheel, safety signs and an operators manual. Never bypass or operate the machine with any of the guards or safety device removed.

**Read and fully understand all the safety practices discussed on pages 4 and 5 of this manual. All safety rules must be understood and followed by anyone who works with reel grinders.**

Before operating a reel grinder, an operator must read and understand all of the information in the owner's manual and in the safety signs attached to the product. A person who has not read or understood the owner's manual and safety signs is not qualified to operate the unit. Accidents occur often on machines that are used by someone who has not read the owner's manual and is not familiar with the equipment. If you do not have an owner's manual or current production safety signs, contact the manufacturer or your dealer immediately.

Reel grinders are designed for one-man operation. Never operate the grinder with anyone near, or in contact with, any part of the grinder. Be sure no one else, including bystanders, are near you when you operate this product.

Following these simple, basic safety rules, as well as others identified in the owner's manual and in product safety signs, will help minimize the possibility of accidents and increase your productivity in using this product. Be careful and make sure that everyone who operates the grinder knows and understands that this is a very powerful piece of machinery, and if used improperly, serious injury or death may result. The final responsibility for safety rests with the operator of this machine.

**TO THE DEALER:**

Assembly and proper installation of this product is the responsibility of the John Deere dealer. Read manual instructions and safety rules. Make sure all items on the Preparation Check List in the Operator's Manual are completed before releasing equipment to the owner.

**TO THE OWNER:**

Read this manual before operating your Frontier equipment. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all adjustments and operating procedures before attempting to operate the equipment. Replacement manuals can be obtained from you selling dealer.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Please observe all safety information in this manual and safety decals on the equipment.

For service, your authorized John Deere dealer has trained mechanics, genuine Frontier service parts, and the necessary tools and equipment to handle all of your service needs.

Use only genuine Frontier service parts.

# SAFETY INSTRUCTIONS

***Safety Awareness Symbols*** are inserted into this manual to alert you to possible ***Safety Hazards***. Whenever you see these symbols, follow their instructions.

The ***Warning Symbol*** identifies special instructions or procedures which, if not correctly followed, could result in personal injury.

The ***Caution Symbol*** identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.

1. **KEEP GUARDS IN PLACE** and in working order.
2. **REMOVE WRENCHES AND OTHER TOOLS.**
3. **KEEP WORK AREA CLEAN.**
4. **DON'T USE IN DANGEROUS ENVIRONMENT.** Don't use Grinder in damp or wet locations. Machine is for indoor use only. Keep work area well lit.
5. **KEEP ALL VISITORS AWAY.** All visitors should be kept a safe distance from work area.
6. **MAKE WORK AREA CHILD-PROOF** with padlocks or master switches.
7. **DON'T FORCE THE GRINDER.** It will do the job better and safer if used as specified in this manual.
8. **USE THE RIGHT TOOL.** Don't force the grinder or an attachment to do a job for which it was not designed.
9. **WEAR PROPER APPAREL**. Wear no loose clothing, gloves, neckties, or jewelry which may get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.
10. **ALWAYS USE SAFETY GLASSES.**
11. **SECURE YOUR WORK.** Make certain that the cutting unit is securely fastened with the clamps provided before operating.
12. **DON'T OVERREACH.** Keep proper footing and balance at all times.
13. **MAINTAIN GRINDER WITH CARE.** Follow instructions in Service Manual for lubrication and preventive maintenance.
14. **DISCONNECT POWER BEFORE SERVICING,** or when changing the grinding wheel.
15. **REDUCE THE RISK OF UNINTENTIONAL STARTING.** Make sure all switches are **OFF** before plugging in the grinder.
16. **USE RECOMMENDED ACCESSORIES**. Consult the manual for recommended accessories. Using improper accessories may cause risk of personal injury.
17. **CHECK DAMAGED PARTS.** A guard or other part that is damaged or will not perform its intended function should be properly repaired or replaced.
18. **KNOW YOUR EQUIPMENT.** Read this manual carefully. Learn its application and limitations as well as specific potential hazards.
19. **KEEP ALL SAFETY DECALS CLEAN AND LEGIBLE.** If safety decals become damaged or illegible for any reason, replace immediately. Refer to replacement parts illustrations in Service Manual for the proper location and part numbers of safety decals.
20. **DO NOT OPERATE THE GRINDER WHEN UNDER THE INFLUENCE OF DRUGS, ALCOHOL, OR MEDICATION.**

# SAFETY INSTRUCTIONS

IMPROPER USE OF GRINDING WHEEL MAY CAUSE BREAKAGE AND SERIOUS INJURY.

Grinding is a safe operation if the few basic rules listed below are followed. These rules are based on material contained in the ANSI B7.1 Safety Code for "Use, Care and Protection of Abrasive Wheels". For your safety, we suggest you benefit from the experience of others and follow these rules.

## DO

1. **DO** always **HANDLE AND STORE** wheels in a careful manner.
2. **DO VISUALLY INSPECT** all wheels before mounting for possible damage.
3. **DO CHECK MACHINE SPEED** against the established maximum safe operating speed marked on wheel.
4. **DO CHECK MOUNTING FLANGES** for equal and correct diameter.
5. **DO USE MOUNTING BLOTTERS** when supplied with wheels.
6. **DO** be sure **WORK REST** is properly adjusted.
7. **DO** always **USE A SAFETY GUARD COVERING** at least one-half of the grinding wheel.
8. **DO** allow **NEWLY MOUNTED WHEELS** to run at operating speed, with guard in place, for at least one minute before grinding.
9. **DO** always **WEAR SAFETY GLASSES** or some type of eye protection when grinding.

## DON'T

1. **DON'T** use a cracked wheel or one that **HAS BEEN DROPPED** or has become damaged.
2. **DON'T FORCE** a wheel onto the machine **OR ALTER** the size of the mounting hole--if wheel won't fit the machine, get one that will.
3. **DON'T** ever **EXCEED MAXIMUM OPERATING SPEED** established for the wheel.
4. **DON'T** use mounting flanges on which the bearing surfaces **ARE NOT CLEAN, FLAT AND FREE OF BURRS.**
5. **DON'T TIGHTEN** the mounting nut **EXCESSIVELY.**
6. **DON'T** grind on the **SIDE OF THE WHEEL** (see Safety Code B7.2 for exception).
7. **DON'T** start the machine until the **WHEEL GUARD IS IN PLACE.**
8. **DON'T JAM** work into the wheel.
9. **DON'T STAND DIRECTLY IN FRONT** of a grinding wheel whenever a grinder is started.
10. **DON'T FORCE GRINDING** so that motor slows noticeably or work gets hot.

AVOID INHALATION OF DUST generated by grinding and cutting operations. Exposure to dust may cause respiratory ailments. Use approved NIOSH or MSHA respirators, safety glasses or face shields, and protective clothing. Provide adequate ventilation to eliminate dust, or to maintain dust level below the Threshold Limit Value for nuisance dust as classified by OSHA.

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**This machine is intended for grinding the reel of reel type mower units <u>ONLY.</u> Any use other than this may cause personal injury and void the warranty.**

**To assure the quality and safety of your machine and to maintain the warranty, you MUST use original equipment manufactures replacement parts and have any repair work done by a qualified professional.**

**ALL operators of this equipment must be thoroughly trained BEFORE operating the equipment.**

**Do not use compressed air to clean grinding dust from the machine. This dust can cause personal injury as well as damage to the grinder. Machine is for indoor use only. Do not use a power washer to clean the machine.**


### Low Voltage Relay

The grinder is equipped with a high-low voltage relay which is factory preset at 100-140 VAC. If the power supply line does not deliver 100-140 VAC power under load, the relay will open and trip out the starter. If this occurs, your power supply line is incorrect and must be correct before proceeding further with the grinder.

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## DAILY MAINTENANCE BY THE OPERATOR

On a daily basis, clean the machine by wiping it off.
On a daily basis, remove all grinding grit from the grinding shaft, traverse shafts, and tooling bar area.
On a daily basis, inspect the machine for loose fasteners or components.
Contact your company's Maintenance Department if damaged or defective parts are found.

**DO NOT USE COMPRESSED AIR TO CLEAN GRINDING DUST FROM GRINDER.**

# SAFETY INSTRUCTIONS

**PLEASE TAKE SPECIAL NOTE OF THE FOLLOWING WARNING DECALS LOCATED ON THE GRINDER.**

### GRINDING WHEEL RPM

**⚠ CAUTION**

**To Avoid Injury:**
-Do not exceed grinding wheel maximum operating speed of 3600 revolutions per minute.

**⚠ ATENCIÓN**

**Para evitar lesiones:**
-No exceda la velocidad de funcionamiento máxima, de 3600 revoluciones por minuto, de la rueda rectificadora.

### GENERAL INFORMATION

**⚠ CAUTION**

**To Avoid Injury:**
-Read Operator's Manual before operating, servicing, or repairing equipment. Follow all safety rules and instructions. (Manuals are available from your selling dealer.)
-Keep bystanders away from equipment during operation. Keep all shields in place and in good condition.
-Wear all of the appropriate safety equipment specified in the Operator's Manual while operating this machine.
-Always make sure machine is off and all machine movement has stopped before leaving machine.
-Never allow children or untrained persons to operate equipment.

**⚠ ATENCIÓN**

**Para evitar lesiones:**
-Lea el manual del operador antes de la puesta en funcionamiento, del mantenimiento o de la reparación del equipo. Siga todas las reglas e instrucciones de seguridad. (Los manuales se encuentran disponibles a través de su distribuidor).
-Mantenga al personal ajeno alejado del equipo durante el funcionamiento. Mantenga todos los protectores en su lugar y en buenas condiciones.
-Durante el funcionamiento de esta máquina, utilice todos los equipos de seguridad correspondientes especificados en el manual del operador.
-Asegúrese siempre de que la máquina se encuentre apagada y haya dejado de moverse antes de abandonarla.
-Nunca permita que un niño o una persona sin capacitación pongan la máquina en funcionamiento.

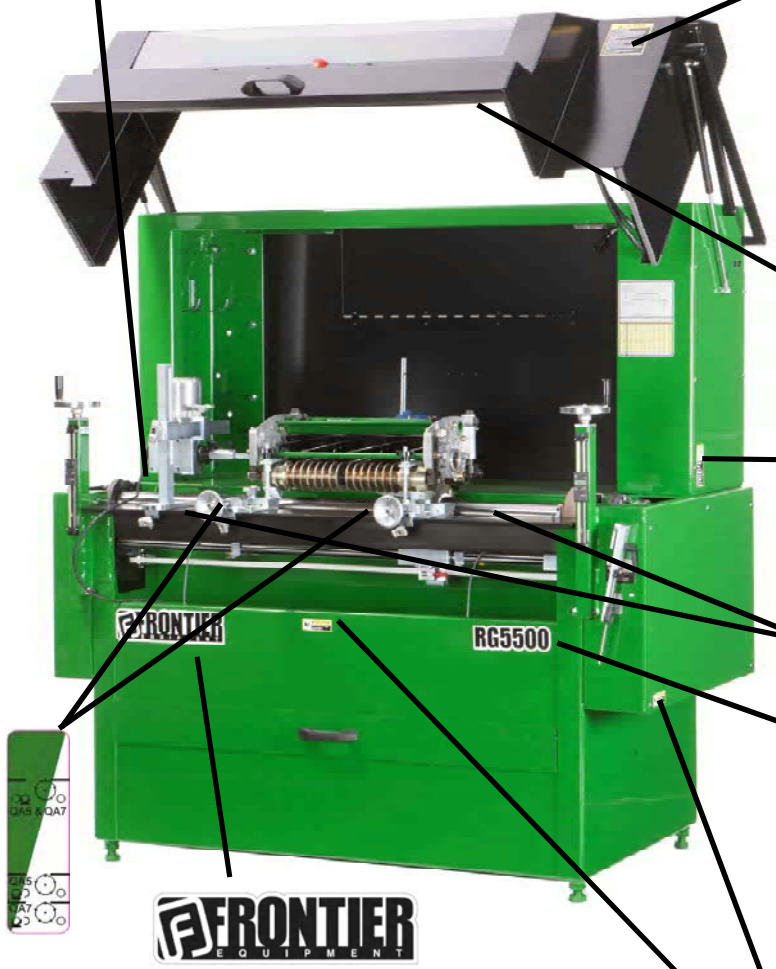
### ELECTRICITY

**⚠ CAUTION**

**To Avoid Injury:**
-Make sure all electrical power to this machine has been disconnected before removing any electrical panels or covers for maintenance.

**⚠ ATENCIÓN**

Para evitar lesiones:
-Asegúrese de que se haya desconectado por completo el suministro eléctrico de esta máquina antes de retirar los paneles eléctricos o las cubiertas para el mantenimiento.




**RG5500**



FRONTIER EQUIPMENT

### SHARP OBJECTS

**⚠CAUTION**

**To Avoid Injury:**
-Keep hands away from rotating objects

**⚠ATENCIÓN**

**Para evitar lesiones:**
-Mantenga las manos alejadas de los objetos giratorios

Label Sheet
(English and Spanish)
Part Number 5NT155301
(English and French)
Part Number 5NT155302

# GETTING TO KNOW YOUR GRINDER


## SPECIFICATIONS

| | |
|---|---|
| Traversing Switches | Solid state, non-contacting proximity switches. |
| Overall Width | 71" [181 cm] |
| Overall Height | 69" [175 cm] with door closed, 87" [221 cm] with door open |
| Overall Depth | 42" [107 cm]without workstation, 79" [201 cm] with optional workstation |
| Weight | 1450 lbs. [658 kg] 1650 lbs shipping weight [748 kg] |
| Base Construction | Precision heavy duty reinforced welded steel base |
| Carriage Rails | Precision Ground, Hardened Steel - 1.000 Dia. [25.4 mm] |
| Grind Head Motor | 1HP AC Motor, 3450 RPM |
| Spin Motor | .20 HP Fan Cooled Variable Speed DC Motor |
| Sound Level | More than 75 Dba, Less than 95 Dba |
| Auto Traverse | Belt driven with easy to engage clamp system |
| Control System | *Safety grind motor and spin drive door interrupt switches<br>*Reversible Spin drive for variable speed Spin or variable torque relief functions<br>*Variable speed traverse control. |
| Options: | *Manual Winch and Boom Kit, Electric Winch and Boom Kit or Lift Platform. |

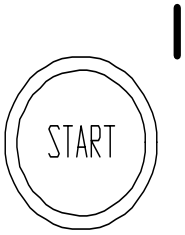
# GETTING TO KNOW YOUR GRINDER (Continued)

**CONTROL PANEL COMPONENT IDENTIFICATION**

Review the following control panel component descriptions before proceeding with the instructions

**SYSTEM START PUSHBUTTON**

The green pushbutton is the system start switch. Pushing it will engage the magnetic starter and power the control panel. The magnetic starter will not engage unless the emergency stop pushbutton is pulled out and the grinding motor switch and spin motor switch are turned off.



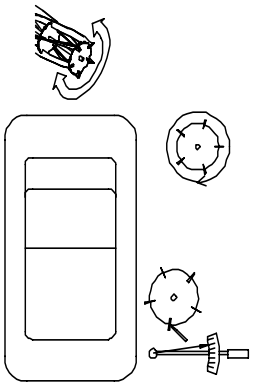

**GRIND SELECTOR SWITCH**

**Variable speed spin**

Switch must be up to perform spin grinding operations.

**Variable Torque Relief**

Switch must be down to perform relief grinding operations.

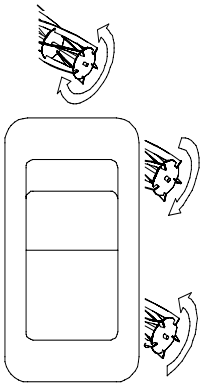


**SPIN DRIVE ROTATION SWITCH**

**Forward / Off / Reverse**

This switch reverses the direction of the spin drive motor.

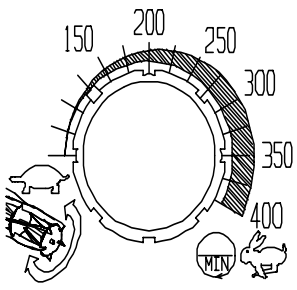
IMPORTANT: Because the spin drive motor can be flipped on the horizontal adjustment arm, the direction may be opposite of what is shown on the decal.



**SPIN SPEED POTENTIOMETER DIAL RPM**

Adjusts the speed of reel rotation when you have the grind selector switch set at variable speed spin.

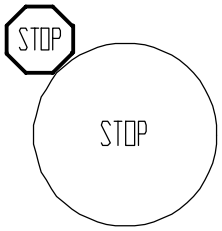
**GUARD DOORS MUST BE SHUT FOR SPIN DRIVE TO OPERATE.**



# GETTING TO KNOW YOUR GRINDER (Continued)

**PUSH-PULL EMERGENCY STOP BUTTON**

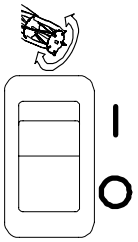
Push in to cut all power to the control panel functions. This removes power from all motors, including the grinding motor, traverse motor, spin motor, etc. To restore power, pull up on button and press the Start button.




**SPIN MOTOR SWITCH On / Off**

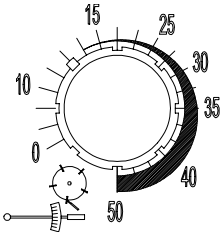
Turn the Spin Motor on and off.

**GUARD DOORS MUST BE SHUT FOR GRIND MOTOR TO OPERATE.**



**RELIEF TORQUE DIAL**

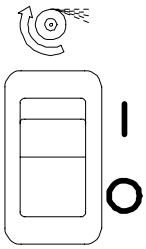
Adjusts the Spin Drive Motor torque (the torque holding the reel blade to the relief finger) when Grind Selector Switch is set at variable Torque Relief.




**GRINDING WHEEL MOTOR SWITCH On / Off**

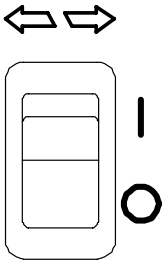
Turn the Grinding Wheel Motor on and off.

**GUARD DOORS MUST BE SHUT FOR GRIND MOTOR TO OPERATE.**



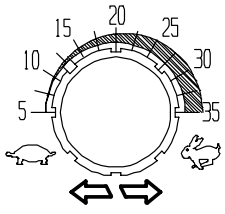
**TRAVERSE MOTOR SWITCH**

Turns the traverse drive motor ON/OFF.



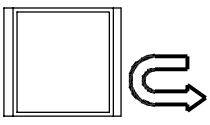
**TRAVERSE SPEED POTENTIOMETER DIAL - FT / MIN**

Adjusts the speed of the left & right movement of the Grinding wheel.




**TRAVERSE REVERSE SWITCH**

Reverses the direction of the grinding head if pushed when the head is moving.



## FRONT AND REAR MOWER MOUNTING

The mowing unit should be placed in the machine with the rear roller on the table and front roller held in the front tooling. The front tooling can be moved side to side along the tooling bar so they can be positioned as far apart as necessary to accommodate all reel widths. Decals on the tooling bar make it easy to position the tooling based on the width of the reel. To move the tooling, loosen the knob located at the front of the tooling base and slide tooling along the tooling bar. The tooling should be located as close to the frame as possible leaving the maximum room to use the position gauge (the gauge will be discussed in the alignment section). The horizontal position is attained by using the hand wheel located at the front of the tooling. If you are grinding a Quick Adjust mowing unit (QA7 or QA5), use the decals located on the tooling to quickly position the reel. There are two positions for each reel depending on how the front roller is mounted. See FIG 2.

If you are using the all-position brackets, the vertical and horizontal position can be adjusted by loosening the knobs located on the side of the tooling and moving to a new set of pins.

Verify that the reel is positioned properly for the spin wheel and relief wheel by checking the travel limits, both wheels will need to have clearance to come off the reel on both sides. Checking during setup will eliminate the need for major adjustments and alignments when going from spin grinding to relief grinding. When the mower is in place lock it into position by tightening all knobs. Lift the rear roller onto the angled bracket and clamp the roller firmly by squeezing the clamp handle.

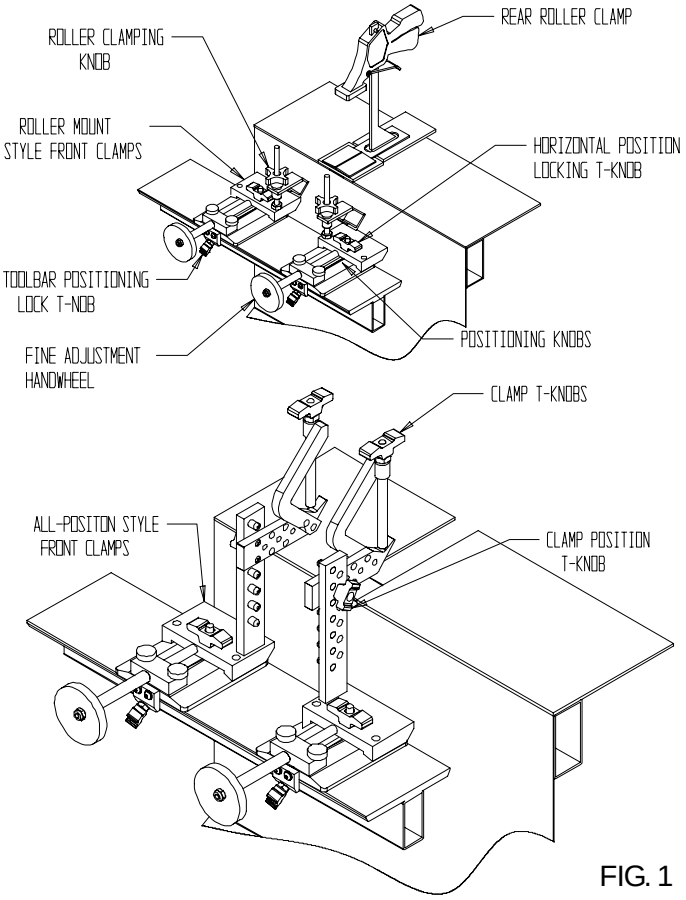



FIG. 1

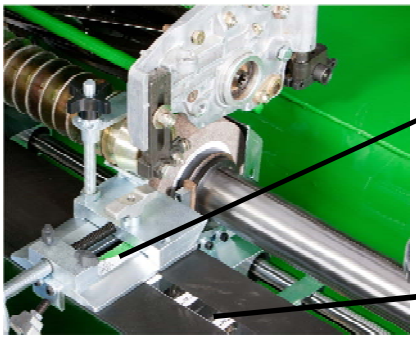



FIG. 2

## REEL POSITION

The reel should be positioned so that it is at a one o'clock or 30° angle position in reference to the grinding wheel. See FIG 3. If the all-position brackets are used try to position the unit so that the bottom of the reel is between 1.50-2.00" [38-51MM] off the table. When using the roller mount style tooling try to maintain the one o'clock position and check for clearance between the reel and grinding wheel. Verify that the proper relief angle can be achieved with this setting and make any adjustments if necessary.

If you are grinding a QA7 or QA5 reel using the roller style mounts, use the decals located on the tooling to obtain the optimal position to grind the reel. See fIG 2

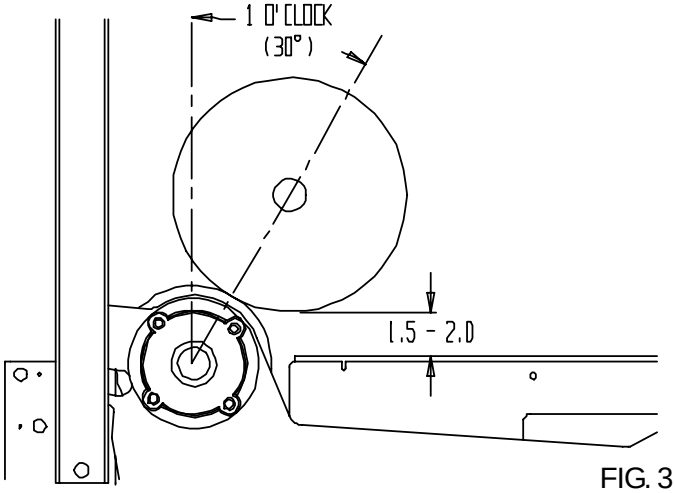



FIG. 3

### TRAVERSE ENGAGEMENT AND RELEASE

The belt that drives the relief and spin hubs left and right can be engaged and released by flipping the clamp located on the bottom of the grinding head assemblies. Moving the lever to the left will engage the belt and moving it to the right will disengage the belt. The tip can be adjusted if necessary to increase or decrease the tension on the belt. See adjustments in the service manual for more details.

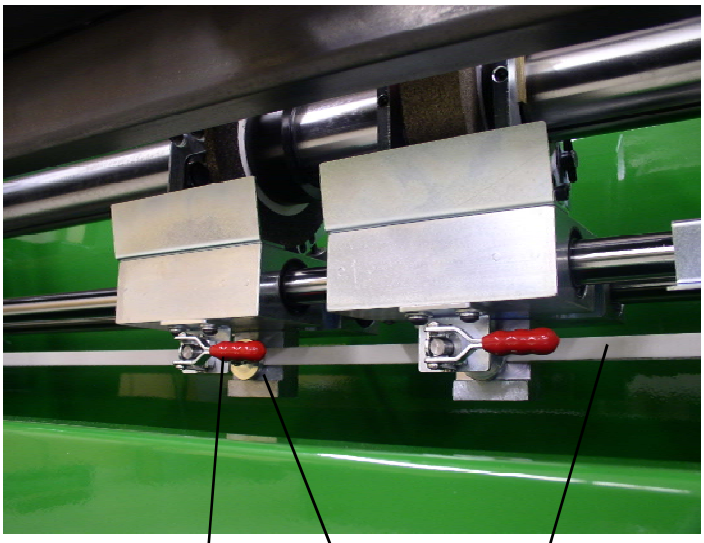



FIG.4

**THE BELT CLAMP TIP IS ADJUSTED AT THE FACTORY TO ALLOW THE BELT TO SLIP IF THE HUB COMES IN CONTACT WITH SOMETHING. CAUTION SHOULD BE USED WHEN ADJUSTING THE TIP. IF THE CLAMP IS OVER-TIGHTENED, THE BELT WILL NOT SLIP WHICH MAY CAUSE DAMAGE TO THE MACHINE OR REEL.**

### TRAVERSE PROXIMITY SWITCHES

Two movable proximity switches determine the left and right limits of grinding head assembly. An LED on the switch lights when the grinding head gets close to the head of the proximity switch. The sensors are mounted in the Proximity Brackets located on the traverse shafts. The brackets can easily be slid along the shafts for quick and easy travel limit adjustments. When switching from the spin mode to the relief mode, the brackets will need to be lifted off the shafts and snapped back on the shafts in the proper position.

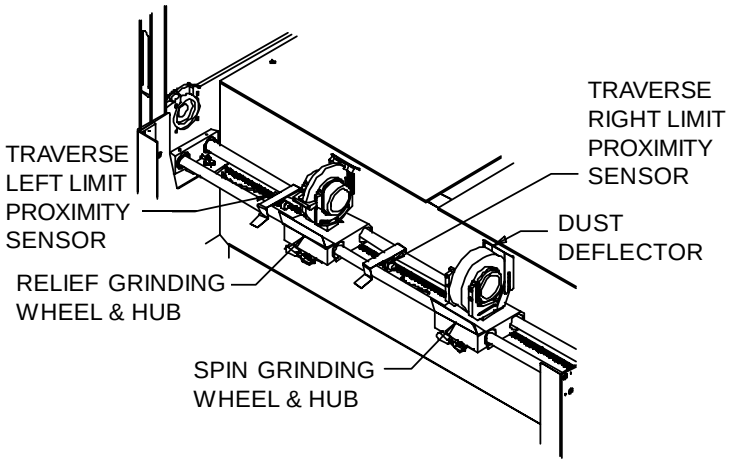



FIG. 5

### SPIN/RELIEF GRINDING HEAD

This grinder is equipped with separate spin and relief grinding wheels. When the setup is done properly the reel will be only need to be positioned and aligned once for both cycles. The spin wheel is located on the right side of the machine and is wider than the relief wheel. Move the wheel that is not being used as far to that side as possible to give the maximum amount of room to setup and operate the machine. The proximity sensors must be moved so that the wheel in use is between the two sensors. Make sure that the wheel that is not in use is not engaged to the drive belt.

# GETTING TO KNOW YOUR GRINDER (Continued)

**RELIEF ANGLE ADJUSTMENT**

Rotating the finger system around the grinding wheel will change the relief angle. By loosening the large ratchet handle the finger system can be rotated to achieve the factory angles, or whatever angle you select. See FIG. 6. By rotating the finger forward the relief angle will decrease and rotating it rearward the relief angle will increase. Retighten the ratchet handle when adjustment is correct.

**RELIEF WHEEL DIAMETER ADJUSTMENT**

As the wheel wears, the finger system will need to be adjusted to maintain the correct gap between the fixed finger and wheel. To move the finger system loosen the small ratchet handle. See FIG. 6. The gap between the fixed finger and the grinding wheel should be between .06" [1.5 mm] and .18" [4.6 mm] depending on the amount of existing relief on the reel. Retighten the ratchet handle after the adjustment is made.

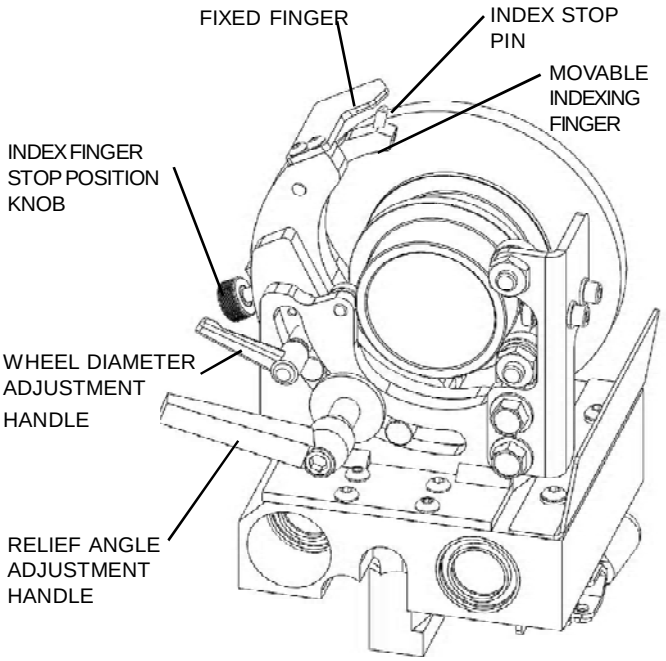



FIG. 6

**INDEX FINGER ADJUSTMENTS**

The Relief Assembly includes two fingers. See FIG. 6. The Fixed Relief Finger hold the blade in position during the relief grind process. The Movable Index Stop Finger moves from the Relief Finger Side (back side) of the reel blade when traversing from right to left, to the grinding wheel side (front side) of the reel blade when traversing from left to right. The indexing finger allows the grinder to index to the next blade automatically during the relief grind. Improper adjustment of the relief fingers assembly may result in a bad grind or possibly damage to the reel or machine.

The Index Finger Stop Position Knob adjusts where the Index finger stops when the reel blade indexes. See FIG. 6. Proper position of this stop is critical to allow the reel blade to smoothly transition from the Index Finger to the Fixed Finger.

IMPORTANT! After adjusting the Index Finger Stop Position Knob there should be 1/32" [0.8 mm] clearance between the index finger and the reel blade when you push on the index finger. This will allow the Fixed Relief Finger to guide the reel blade during the relief grind cycle. The Reel blade should never be riding on the Index Finger when grinding.

The Index Stop Pin is height adjustable. It should be adjusted to catch the reel blade and still leave enough clearance to the reel spider after the relief is ground to the depth required.

There is a forward position stop on the Finger system located near the pivot point of the Index Finger. This will only need to be adjusted if there is a clearance issue with the finger when it travels forward. See FIG 7.

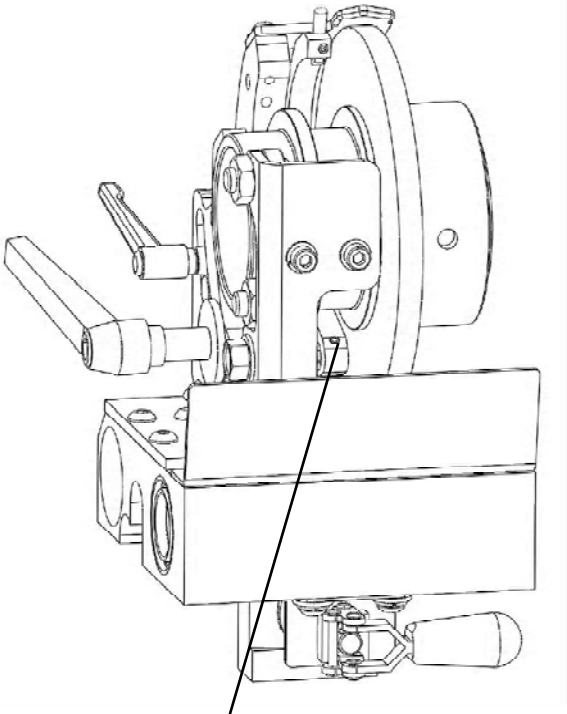



FIG. 7

**ALIGNMENT GAUGE**

A properly ground reel should be cylindrical. All taper must be ground out of the reel. To ensure the reel will be ground correctly it **MUST** be aligned precisely prior to grinding. The digital alignment gauge is used for accurate reel setup. The gauge is used for setting the horizontal alignment and checking for taper within thousands of an inch. The digital gauge allows you to measure one end of the reel by extending the slide rail until you make contact with the center shaft of the reel. See FIG. 8. By measuring at the far left and the far right on the center shaft you can adjust the horizontal alignment using the front tooling adjustment knobs until the alignment is within .005 inches [.13mm].

When this is completed, you can then reset the gauge to zero on the center shaft, retract the gauge slide and measure the outer surface of a reel blade. By comparing the readings on the left side of the reel to the right side of the reel, you can determine exactly how much taper you have in the reel. Compensating for taper will be explained later in the grinding procedure.

NOTE: The gauge can be set for both inch and metric readout.

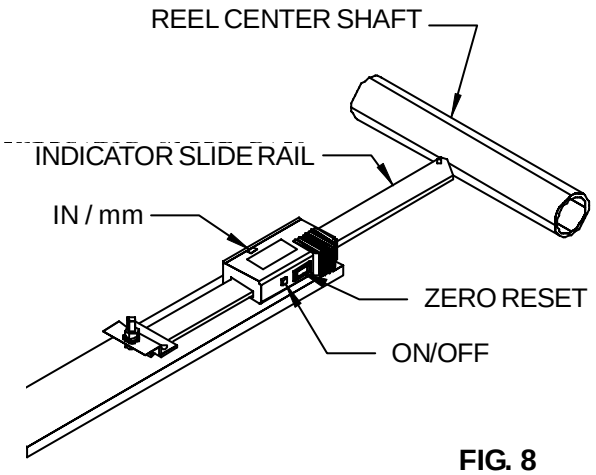



**FIG. 8**

## PREPARE MOWING UNIT FOR SHARPENING

Always follow the procedures specified in the cutting unit manual when preparing the unit for sharpening. It is recommended that the reel to be sharpened is thoroughly cleaned. Remove the wheels and bed bar, if possible, from the reel. **The bedknives should be sharpened when the reel is sharpened.** Inspect, adjust and/or replace any worn or damaged bearings. Make sure the reel bearings are in good working condition and adjusted properly so the reel turns easily by hand.

Because this grinder mounts the reel using the reel rear roller and front roller if applicable, the bearings in the rollers must be in good repair with no free play. **The front and rear rollers must be properly aligned parallel to the reel prior to grinding.**

**REELS WITH EXCESS TENSION ON THE BEARINGS WILL BE EXTREMELY DIFFICULT TO SPIN GRIND AND COULD CAUSE DAMAGE TO THE REEL OR THE SPIN DRIVE MECHANISM ON YOUR GRINDER. NO MORE THAN 25. IN. LBS MAXIMUM TORQUE LOAD TO ROTATE THE REEL IS ALLOWED OR DAMAGE TO THE SPIN DRIVE COULD OCCUR.**

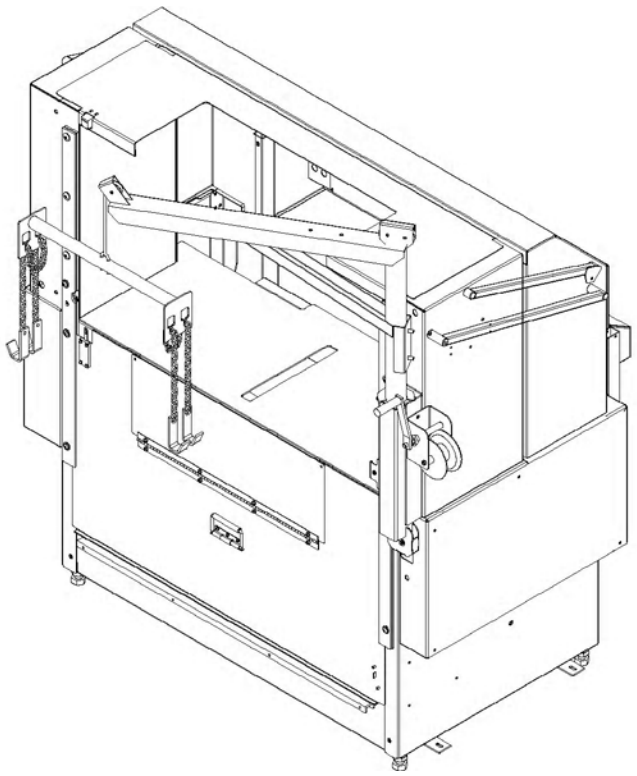


**FIG. 9**

### LIFTING REEL INTO POSITION

The RG5500 grinder does not come standard with a lift device. If the facility does not have a lift, it is recommended that the winch and boom kit or Rear Lift Platform is used.
.

WINCH & BOOM KIT

The Winch & Boom kit mounts to the back right side of the cabinet. When using the Winch & Boom, position the cutting unit behind the machine and secure the spreader bar to the cutting unit. Use the winch to lift the unit and swing the reel into the working area of the machine. (Refer to manual in kit for further instructions.) See FIG. 9 - Available with a Manual or Electric winch.

REAR LIFT PLATFORM

The Rear Lift Table is a portable platform that can be used to raise the reel up level to the grinder. The reel can be rolled onto the platform with the front of the reel facing the front of the grinder. With rear roller clamp removed the reel can be rolled from the platform into the machine from the rear. The Workstation uses a 12V rechargeable system to power the platform and can be moved around the facility on the 4 caster wheels .
See FIG. 10

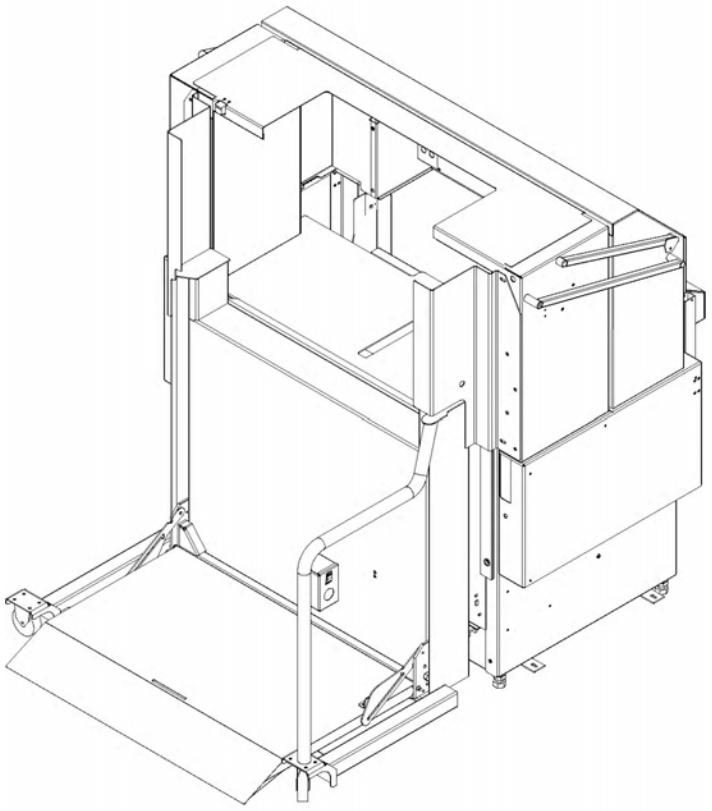


**FIG. 10**

## INSTALL REEL

Move the reel to the approximate position having the rear roller on the tabletop, and front roller on the front roller Mounts.

**! MAKE SURE THE GRINDING WHEEL IS LOW ENOUGH TO CLEAR THE REEL. YOU CAN LOWER THE GRINDING WHEEL BY TURNING BOTH HANDWHEELS COUNTERCLOCKWISE.**

Position front reel in the center of the machine. Move the roller mounts as far out as possible to the ends of the front roller. (See FIG 11). Use the decals on the tooling bar to aid in the positioning of the front tooling. Check for clearance to the tooling, front roller and frame with both the spin and relief wheels. This will ensure that you will not have to move the reel between the spin and relief grinding. NOTE: On large reels it may be necessary to offset the reel slightly from center to allow the spin drive to be mounted on the appropriate side of the cutting unit.

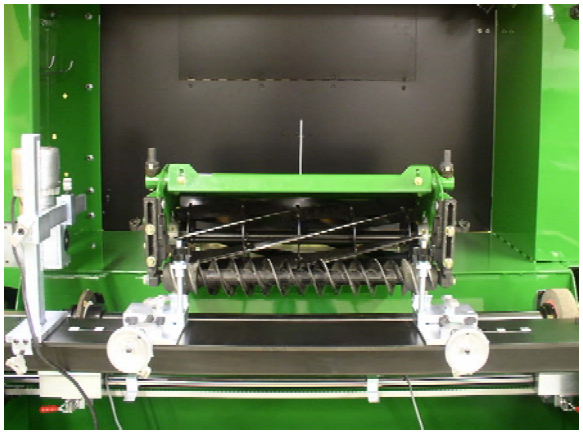


**FIG. 11**

Place the rear roller onto the rear roller clamp. (See FIG 12).

If using the all-position brackets, set the vertical height of the clamps so that the bottom of the reel is 1.5-2.0 inches [38-51mm] above the table. It is also recommended to mount the support arm with as little extension from the all position bracket as possible leaving just enough clearance for mounting the reel in the “V” of the support arm.


**FIG. 12**

Position the reel in and out by adjusting the front handwheels. The reel should be positioned so that the reel shaft is located at a 1 o’clock or 30° position to the grinding wheel. See figure 13. If there are clearance issues the reel can be moved forward or backward to resolve this issue. If you are grinding a QA5 or QA7 reel use the decals located on the tooling to quickly locate the reel in the optimal position. See FIG 2. After the reel is positioned correctly lock down the front roller and tighten the rear clamp. Make sure all knobs are tight before grinding.

**! FIRMLY TIGHTEN ALL LOCKING KNOBS BEFORE GRINDING. ANY LOOSE KNOBS, CLAMPS OR BEARINGS WILL ADVERSELY AFFECT THE GRIND QUALITY.**

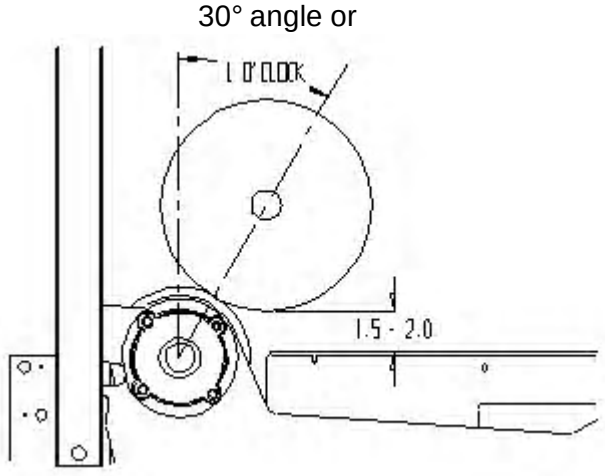



**FIG. 13**

## ALIGN THE REEL

**IMPORTANT:** When measuring to the reel center shaft always make sure you are contacting an area free of dirt and grass.

The digital gauge horizontal extension bracket is vertically adjustable to allow the digital gauge to be positioned to avoid any reel frame member. In addition, the mounting of the vertical slide to the horizontal weldment has three positions. Removed the knob on the side to adjust the tilt of the vertical slide if necessary to avoid a reel frame member. See FIG. 14.

Before aligning the cutting unit, loosen the horizontal locking knobs on the tooling, to allow the cutting unit to be adjusted in the horizontal plane. See FIG. 14.

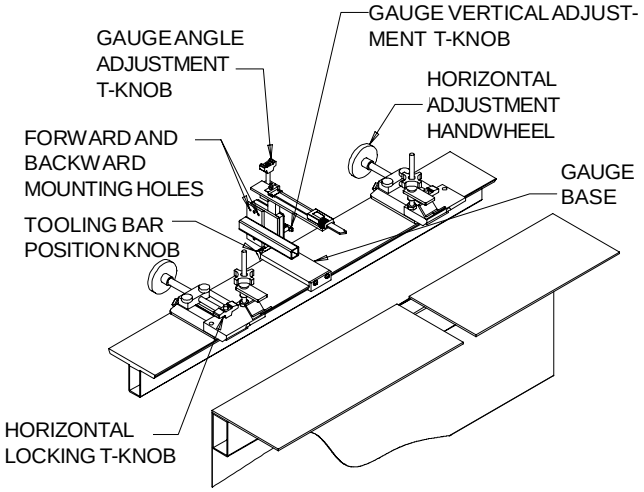



**FIG. 14**

To align the cutting unit, move the digital gauge assembly as far as possible to the left side of the reel. Extend the digital gauge making sure the tip of the gauge is centered on the reel center shaft. See FIG 15. With the gauge pressed against the reel center shaft, set the gauge to zero. Retract the gauge and move to the right side of the reel and measure to the center of the reel shaft. Do not rotate the reel shaft except for a minimum amount if there are clearance issues to the reel blades. With the gauge against the center shaft, adjust the horizontal handwheel until the gauge reads zero. Repeat adjustments going from one side to the opposite side until the alignment is within .005" [.13 mm].

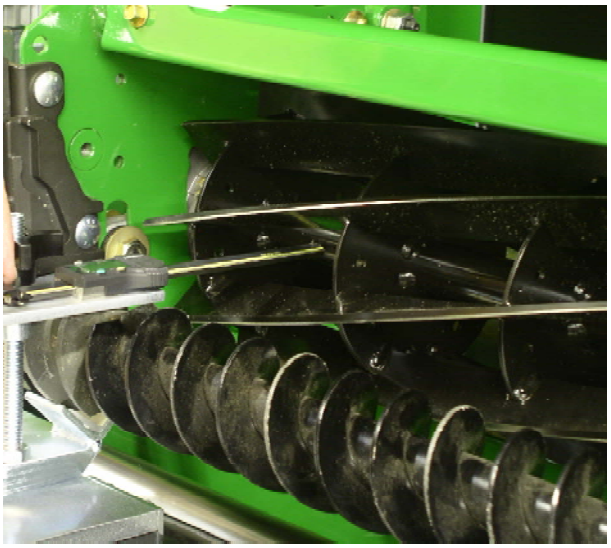


**FIG. 15**

## CHECKING FOR TAPER

First, measure the left side of the reel as far to the left as possible with the digital alignment gauge, make sure the tip of the gauge is centered on the reel center shaft. Set the gauge to zero, then measure to the edge of one blade. Remember or write this number down. Move to opposite side and do the same thing. Compare the two numbers; the difference is the amount of taper in the **radius** of the wheel.

**NOTE: TO OBTAIN A CORRECT TAPER READING TO BE USED WITH THE TAPER CHART LATER, THE READING MUST BE TAKEN AS CLOSE TO THE ENDS OF THE REEL AS POSSIBLE GIVING THE MAXIMUM DISTANCE BETWEEN READINGS.**

To remove the taper in the reel, the side of the reel that is larger will need to be infed heavier to remove this extra material.

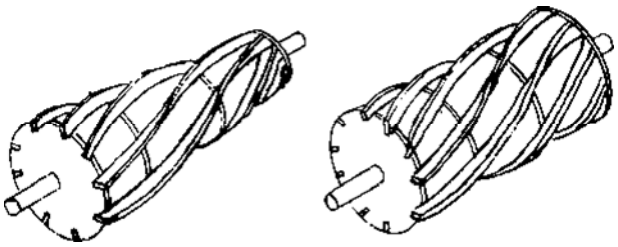


**FIG. 16**

Remove the gauge and store the digital gauge on the pin located on the front right side of the machine. The gauge base can be placed inside the machine out of the way.

## ALIGNMENT OF GRINDING SHAFT TO REEL

To align the grinding shaft to the reel bring the shaft up so that the spin wheel is about ¼ inch [6 mm] from the reel blades. Move the spin wheel to one side of the reel and raise the grinding shaft until the wheel just touches the blade. Move the wheel to the other side of the reel and bring the shaft up until the wheel just touches. Recheck from side to side and make minor adjustments until the wheel touches the same on both ends of the reel. The grind shaft is now aligned vertically to the reels outer diameter. Zero the gauges located on the vertical adjustment housing. Check for high spots in the reel by moving the wheel the length of the reel while spinning the reel. If there are high spots lower the shaft equally on both ends and zero out the gauges again.

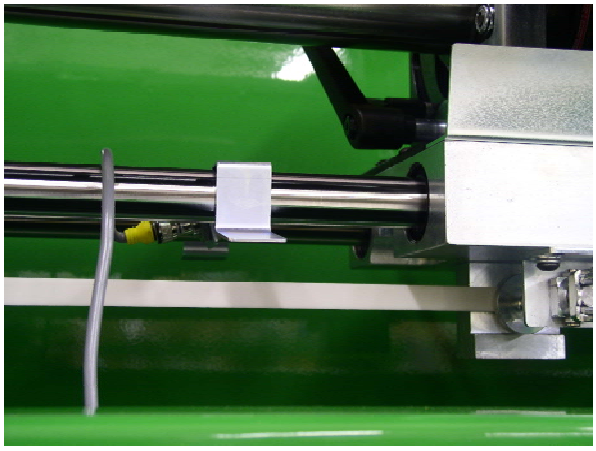


**FIG. 17**

## SETTING THE TRAVERSE LIMITS

Move the grinding wheel to the right until the wheel has cleared the reel by approximately ¼ inch [6 mm] (if clearance to the frame allows). Disengage both the relief and Spin grinding assemblies from traverse belt. Turn the Traverse speed potentiometer to zero and turn on the Traverse Motor Switch. This will activate the proximity sensors. Move the right Traverse Travel Limit switch in until the light on the proximity sensor illuminates. Move the wheel to the opposite end, clearing the reel as mentioned above, and set the left Traverse Travel Limit Switch. (Fig 17) Engage the traverse belt and slowly turn the Traverse Speed up. Allow the wheel to traverse from end to end to verify the switches stop and reverse the direction of the grinding wheel. Verify that the grinding wheel travels fully off the reel at each end. Note: If the reel will hit the frame, then adjust travel sensors so the wheel does not contact the frame.

**! IF THE REEL FRAME EXTENDS BELOW THE REEL ITSELF, MAKE SURE THE STOP IS SET SO THAT THE GRINDING WHEEL DOES NOT RUN INTO THE FRAME WHILE GRINDING.**

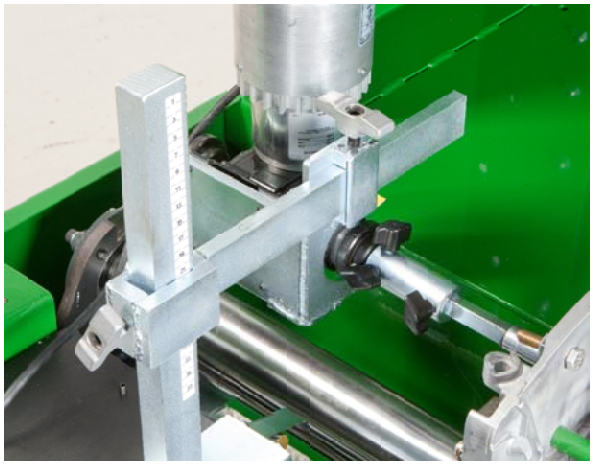


**FIG. 18**

## ATTACHING THE VARIABLE SPEED SPIN DRIVE UNIT TO THE REEL

The spin drive unit attaches to the end of the reel shaft or a drive system component. Consult the cutting unit manual for proper spin drive placement and attachment. Determine which side to mount the spin drive. This will generally be the same drive system component used for backlapping. See FIG. 18.

**IMPORTANT:** When spin grinding, the reel should turn in the same direction as the grinding wheel. See FIG. 19.

Before positioning the spin unit let us familiarize ourselves with the available adjustments and coupler/drive assemblies. See FIG. 20.

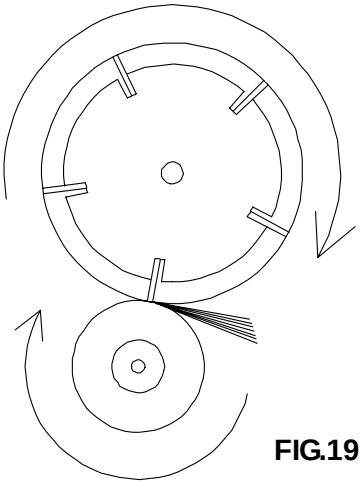


**FIG.19**

# OPERATING INSTRUCTIONS (Continued)

**Knob A—**
Allows the spin unit to be loosened and moved in and out.
**Knob B-**
Allows the spin unit to be loosened and moved up and down.
**Knob C –**
Allows the spin assembly to be loosened from the tooling bar and moved side-to-side.

When positioning the spin unit it may be necessary to complete several of the above adjustments to properly align the spin unit to the reel.

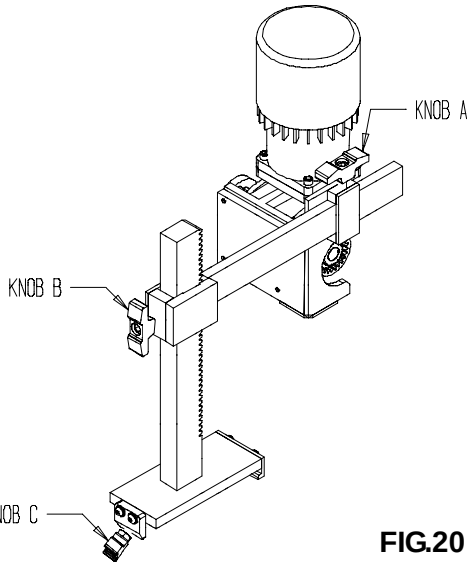



**FIG.20**

**THE COUPLER ASSEMBLY INCLUDES:**
**RUBBER SLEEVE COUPLER:** This is placed in the corresponding flange coupler already mounted in the spin drive shaft. See FIG. 21.
**DRIVE COUPLER ADAPTER ASSEMBLY:** This is mounted to the rubber coupler.
Note: If the Drive Coupler Adapter is removed, there is a short square drive shaft attached to the Adapter Sleeve. This can be used with a socket if there is limited space.
**ADAPTER SLEEVE:** Connects the rubber coupler to the square drive adapter.
**SQUARE DRIVE ADAPTER:** This is inserted into the drive coupler adapter. The square drive adapter has approximately 2" [51 mm] of movement. It will be necessary to move this when attaching reel to spin drive unit. This adapter shaft has a groove machined into it on the opposite end of the snap ring. This groove is there to advise that you have reached the maximum extension of the square drive shaft. If you cannot connect the reel without extending past this groove, then the spin unit must be repositioned on the tooling bar (Knob C). A 1/2" [12.7 mm] square drive socket or reel drive adapter is used to connect the square drive adapter to the reel.

**NOTE:** The 1/2" [12.7 mm] square drive socket or adapter that is placed on the reel when spin grinding is ***NOT*** included with the grinder. See next page for details

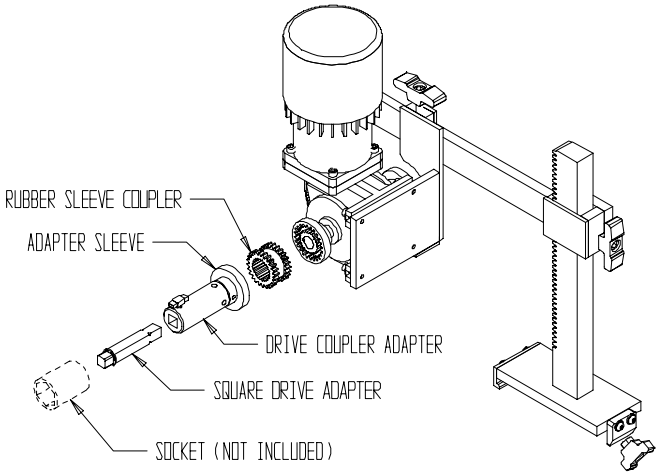



**FIG. 21**

**DO NOT EXTEND SQUARE SHAFT PAST GROOVE, INSTEAD REPOSITION SPIN UNIT.**

The following procedures will make setting up the spin drive unit easier.

1. Move spin drive unit close to the reel. Align the shaft on the spin drive with the nut on reel by completing the necessary adjustments discussed above.
2. Now slide the spin drive unit approximately 7" [18 cm] from the reel drive coupling point and securely fasten to the tooling bar tightening the locking knob. (Knob C)
3. Place the proper 1/2" [12.7 mm] square drive socket or adapter on the reel drive nut and then insert the square drive shaft into the socket. Place the adapter sleeve over the drive shaft and insert the drive coupler adapter assembly into it. Finally place the rubber coupler onto the drive coupler adapter. See FIG. 21.
4. By holding the square drive shaft firmly into position with your left hand you will be able to move the other components to the right and insert the rubber coupler into the flange on the spin drive unit. When this is done tighten the T-Knob on the adapter sleeve to hold all parts in place.
5. Finally readjust the spin drive unit if it is not in alignment.

NOTE: It is not necessary to have perfect alignment but it must be close enough so that the coupler remains engaged and that excess torque is not applied to the reel.

# OPERATING INSTRUCTIONS (Continued)

**REEL DRIVE ADAPTERS**

This grinder is equipped with an adapter that transfers the rotation from the spin drive gear box coupling to a 1/2" male square. To operate the grinder you need an adapter from this 1/2" male square to the reel shaft. These adapters are **NOT** included with this grinder.

Most cutting units In recent years have a male or female spline on the end of the reel shaft that connects to a hydraulic or electric motor shaft.

If you have a reel shaft that has an internal threaded end which you can access, install a hex head bolt or socket head screw of that thread size with a jam nut very tight so it does not loosen while spin grinding and then drive with a 1/2" drive socket for that hex or hex key size.

**JOHN DEERE REELS**

COUPLERS- The external spline shafts use a female splined coupler between the reel shaft and the male splined hydraulic motor shaft. The spline is either an 8,9 or 11 toothed spline. Our recommendation is to purchase the female splined coupler from John Deere and weld it to a short 1/2" square socket extension. Note: The 8 tooth spline adapter can be used with a Square Socket Drive Adapter [3/8" square male to 1/2" square female] without welding.

| REEL DIA | REEL TYPE | Recomendation |
|---|---|---|
| 5" | G, M | Has an 8-T, External shaft. Use coupler AET11038 |
| 7" | H | Has an 11-T, External shaft. Use coupler TCA12581 (NOTE: THIS CAN ALSO BE DRIVEN WITH A 1.25 HEX SOCKET) |
| 7" | 26H | Has a 9-T, External shaft. Use coupler AET11310 (NOTE: THIS CAN ALSO BE DRIVEN WITH A 1.25 HEX SOCKET) |
| 8" | ESP | Has a M16 X 2, External shaft. Use nut A31869 and drive with a 24mm Hex Socket. |
| 5" | WBGM | Use a 3/8"-24 UNF Bolt, and drive with a 9/16 Hex Socket |
| 5" | QA5 | Has an 8-T, Internal Spline shaft. Use part AMT3022, to make an adapter. |
| 7" | QA7 | Has an 11-T, Internal Spline shaft. Use a 1.25 Hex Socket or make and adapter from part TCA18958. |

TORO EQUIPMENT:

Toro uses an 8 tooth female spline or a 9 tooth female spline on their reels. The 8 tooth female spline can be affectively driven with a Square Socket Drive Adapter [3/8"square male to 1/2" square female]. The 9 tooth spline requires an adapter. Our recommendation is to purchase adapter Toro tool part numberTOR-4074 available from K-Line Industries, Inc. 315 Garden Ave. Holland, MI 49424.

JACOBSEN EQUIPMENT:

Below is a list of drive systems based on the cutting units:

* 5" reel units can be driven from the non hydraulic motor end of the reel. Install a 3/8" bolt in the end of the reel shaft with a jam nut very tight so it does not loosen while spinning. Use a 9/16" socket to drive. They can also be driven from the hydraulic motor end by pressing a Square Socket Drive Adapter [3/8" square male to 1/2" square female] into the splined reel coupling Jacobsen part number 337370 and use this pressed assembly as the adapter.
* 7" reel units can be driven from either end. The reel unit has a coupler attached to the reel shaft a both ends. Purchase Jacoben part number 4102440 Reel Motor Shaft and weld the hydraulic motor shaft form the kit to a 1/2" socket and use this weldment as the adapter.
* Tri-King reel units can be driven on older pulley drive units with a 9/16" socket on the 3/8" bolt that holds the pulley. On newer splined units, purchase the splined reel coupling Jacobsen part number 132002 and press a Square Socket Drive Adater [3/8" square male to 1/2"square female] into the splined reel coupling and use this assembly as the adapter.

## RECOMENDATION FOR SPIN DRIVE RPM AND TRANSVERSE SPEED WHEN GRINDING

### SPIN DRIVE RPM

**SPIN DRIVE RPM IS VERY IMPORTANT IN ACHIEVING A QUALITY GRIND. USE CARE IN ESTABLISHING THE SPIN DRIVE RPM, PER THE INSTRUCTIONS BELOW.**

Generally, the Spin Drive RPM will be between 180 RPM (45%) and 380 RPM (100%). The speed required to spin a specific reel is dependant on reel diameter, the number of reel blades, and reel hardness. For all reels, there is an optimum Spin Speed where there is an **AGGRESSIVE**, yet smooth grind as you spin grind the reel. Your objective is to spin grind the reel as aggressively and as fast as possible while maintaining top quality.

It is recommended to start grinding each reel at a Spin Speed of 200 RPM (50%) and evaluate the RPM by adjusting higher and lower to optimize the Spin Speed for that reel. If the Spin Speed is incorrectly set, you can experience two problems, grinding wheel dressing or grinding wheel resonance. Each of these problems is explained below.

On some reels, especially small diameter high blade count reels if the Spin Speed RPM is set too high, the reel can act as a dresser to the grinding wheel. There can develop what appears to be a very aggressive grind (as if the infeed has self infed) and then a sudden stop of grinding with no grinding wheel to reel contact. If this occurs, your Spin Speed was set too high and you effectively dressed your grinding wheel.

Some reels have a resonant RPM where the reel goes into harmonics with the grinding wheel and the resonance vibrates the grinder and results in a very bad grind. By changing the Spin Speed to a higher or lower RPM you will move out of the resonant range.

After determining the best Spin Speed RPM for a reel, note the RPM on the "Set-up Chart" in the "NOTES" section. (Set-up chart is located at the back of this manual) By noting the correct RPM, you will avoid evaluating the Spin Speed the next time you grind the reel. Also note the spin drive position using the position decals on the spin mounting and documenting the position on the "Set-up Chart".

### TRAVERSE DRIVE RPM

The Traverse Speed potentiometer is adjustable from approximately 5 feet per minute [1.5 meters per minute] to 20 feet per minute (6 meters per minute). It is recommended to grind between 15 and 20 feet per minute (4 and 6 meters per minute).

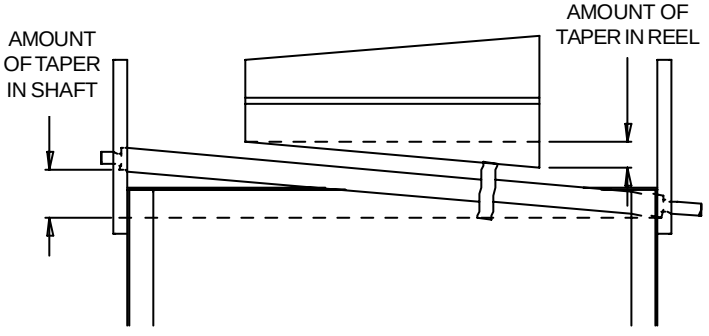
Grinding at a slower traverse speed, 10 feet per minute (3 meters per minute) as an example, will give a better finish but will extend the grind cycle time. Grind finish versus grind cycle time is controlled by the choice of the operator.

## COMPENSATING FOR TAPER.

To maintain the best quality of cut, the taper in a reel must be removed returning the reel to a true cylinder. To remove the taper that was measured with the gauge (as discussed previously in Checking For Taper Section) first align the reel to the shaft by the touch method (as discussed previously). Then drop the side of the grinding shaft that is high (the smaller side of the reel) the amount suggested in the chart
[**See chart on next page or Compensation for Taper Chart located on the machine].**

Example: For a reel that is 22 inches [56 cm] long with a measured taper of .12" [3 mm], the adjuster on the smaller side of the reel would be dropped to read-.546 [13.9 mm].

This will bring the grinding shaft parallel to the reel center shaft. Zero out the digital gauges located on the vertical adjustment towers and infeed both side equally until the wheel just touches the large side of the reel. Zero the gauges again, you are now ready to grind and remove the taper. When grinding, the wheel will only make contact with the larger side of the reel and will gradually grind more as the larger areas are ground away. The reverse button may be used to help speed of this process. Grind until full contact is made across the entire length of the reel, and the reel is sharp the entire width of all blades.



# OPERATING INSTRUCTIONS (Continued)

**TAPER ADJUSTMENT SETUP CHART**
**REEL WIDTH**

| MEASURED TAPER | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 |
|---|---|---|---|---|---|---|---|---|---|
| 0.005 | 0.033 | 0.029 | 0.025 | 0.023 | 0.021 | 0.019 | 0.017 | 0.016 | 0.015 |
| 0.010 | 0.066 | 0.058 | 0.051 | 0.045 | 0.041 | 0.038 | 0.035 | 0.032 | 0.030 |
| 0.015 | 0.100 | 0.086 | 0.076 | 0.068 | 0.062 | 0.056 | 0.052 | 0.048 | 0.045 |
| 0.020 | 0.133 | 0.115 | 0.102 | 0.091 | 0.082 | 0.075 | 0.069 | 0.064 | 0.060 |
| 0.025 | 0.166 | 0.144 | 0.127 | 0.114 | 0.103 | 0.094 | 0.086 | 0.080 | 0.075 |
| 0.030 | 0.199 | 0.173 | 0.153 | 0.136 | 0.123 | 0.113 | 0.104 | 0.096 | 0.089 |
| 0.035 | 0.233 | 0.202 | 0.178 | 0.159 | 0.144 | 0.132 | 0.121 | 0.112 | 0.104 |
| 0.040 | 0.266 | 0.231 | 0.203 | 0.182 | 0.165 | 0.150 | 0.138 | 0.128 | 0.119 |
| 0.045 | 0.299 | 0.259 | 0.229 | 0.205 | 0.185 | 0.169 | 0.156 | 0.144 | 0.134 |
| 0.050 | 0.332 | 0.288 | 0.254 | 0.227 | 0.206 | 0.188 | 0.173 | 0.160 | 0.149 |
| 0.060 | 0.399 | 0.346 | 0.305 | 0.273 | 0.247 | 0.225 | 0.207 | 0.192 | 0.179 |
| 0.070 | 0.465 | 0.403 | 0.356 | 0.318 | 0.288 | 0.263 | 0.242 | 0.224 | 0.209 |
| 0.080 | 0.532 | 0.461 | 0.407 | 0.364 | 0.329 | 0.301 | 0.277 | 0.256 | 0.238 |
| 0.090 | 0.598 | 0.519 | 0.458 | 0.409 | 0.370 | 0.338 | 0.311 | 0.288 | 0.268 |
| 0.100 | 0.665 | 0.576 | 0.508 | 0.455 | 0.412 | 0.376 | 0.346 | 0.320 | 0.298 |
| 0.120 | 0.798 | 0.692 | 0.610 | 0.546 | 0.494 | 0.451 | 0.415 | 0.384 | 0.358 |

**Small side of reel downward adjustment.**

## SPIN GRINDING

After the reel has been aligned and the taper has been adjusted for, you are now ready to spin grind the reel. Close the front and rear guard doors. (The grinding wheel and spin motors will not work unless the doors are closed.) Position the spin/relief selector switch to the spin position. Turn on the Grinding Motor and the Spin Drive Motor switch. Set the spin speed at approximately 200 rpm (Refer to Spin Drive RPM on pervious page). Make sure spin rotation is the same as the grinding wheel – clockwise (CW) looking from right end. See FIG 22.

IMPORTANT: When the reel turns in the same rotation as the grinding wheel, the point of contact where they meet is in opposite directions.

Turn on the traverse drive motor switch and turn the speed dial up to approximately 15- 20.

IMPORTANT: If the grind starts getting heavier, adjust the grinding head down until you can travel the full length of the reel without heavy grinding.

When grinding, infeed the wheel approximately .005" [.13 mm] at a time. Allow the grinding wheel to travel back and forth across the reel 2 to 3 times before infeeding. The spin grinding is completed when full contact is made across the entire length of the reel, the entire width of all blades and the reel is sharp. The last passes should be a normal .005 [.13 mm] infeed grind at a slow traverse speed (approx. 8 feet per minute [2.5 meters per minute] or slower). After the last pass turn the grinder off.
(Note: Due to the positioning of the reel to the 1 o'clock position, infeeding the wheel .015 inches [.38 mm] will remove .010 inches of material. )

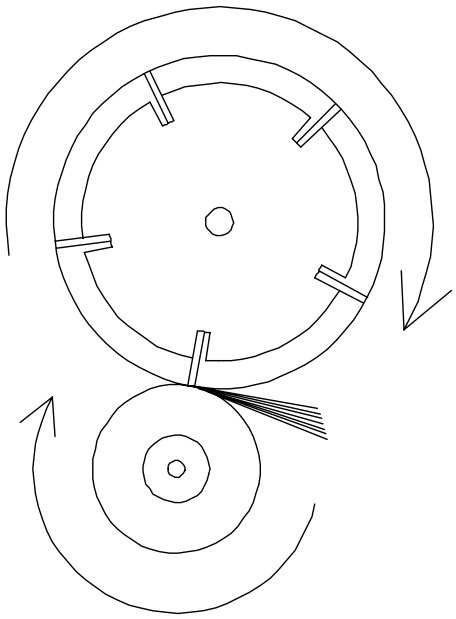


**FIG.22**

**RELIEF GRIND**

To change over to the relief grind, disengage the spin grinding wheel hub assembly and park it as far to the right as possible. Bring the relief hub assembly over to the reel for relief grinding. This will require repositioning the travel proximity switch brackets.

Note: As the reel diameter gets smaller and the number of blades increases the relief grinding wheel diameter works better when smaller. For example a 5" [127 mm] diameter greensmower reels with 11 blades achieve a greater relief angle with a smaller grinding wheel.

**REEL SPIRAL**

Check to see if your mowing unit is normal or reverse helix.
**NOTE:** As you look into the guide finger on **THE NEXT PAGE, IT SHOWS THE NORMAL REEL HELIX.** As you look into the guide finger on the **FOLLOW PAGE, IT SHOWS THE REVERSE REEL HELIX.** The high point of the relief finger is on the right hand side of the grinding wheel.

Most mowing units are normal helix.

**! THE HIGH POINT OF THE RELIEF FINGER MUST ALWAYS BE AT THE CORNER OF THE GRINDING WHEEL THAT IS MAKING CONTACT WITH THE REEL. ON THIS GRINDER THAT IS ALWAYS THE RIGHT HAND SIDE OF THE GRINDING WHEEL.**

**WHEEL DRESSING**

If the grinding wheel becomes loaded with material it may be necessary to dress the wheel. The RG5500 is supplied with a diamond dresser. To use, place the dresser on the spin drive horizontal arm in the area where the wheel is to be dressed. Adjust the dresser to the appropriate position and angle. Raise the grinding wheel so it is nearly touching the dresser.

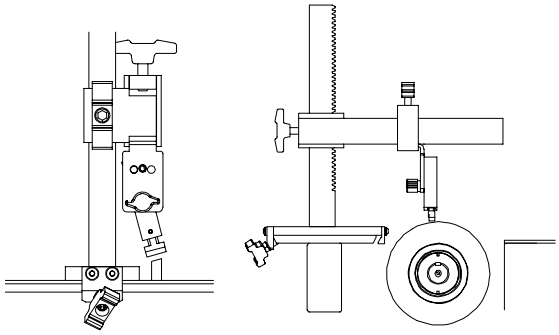
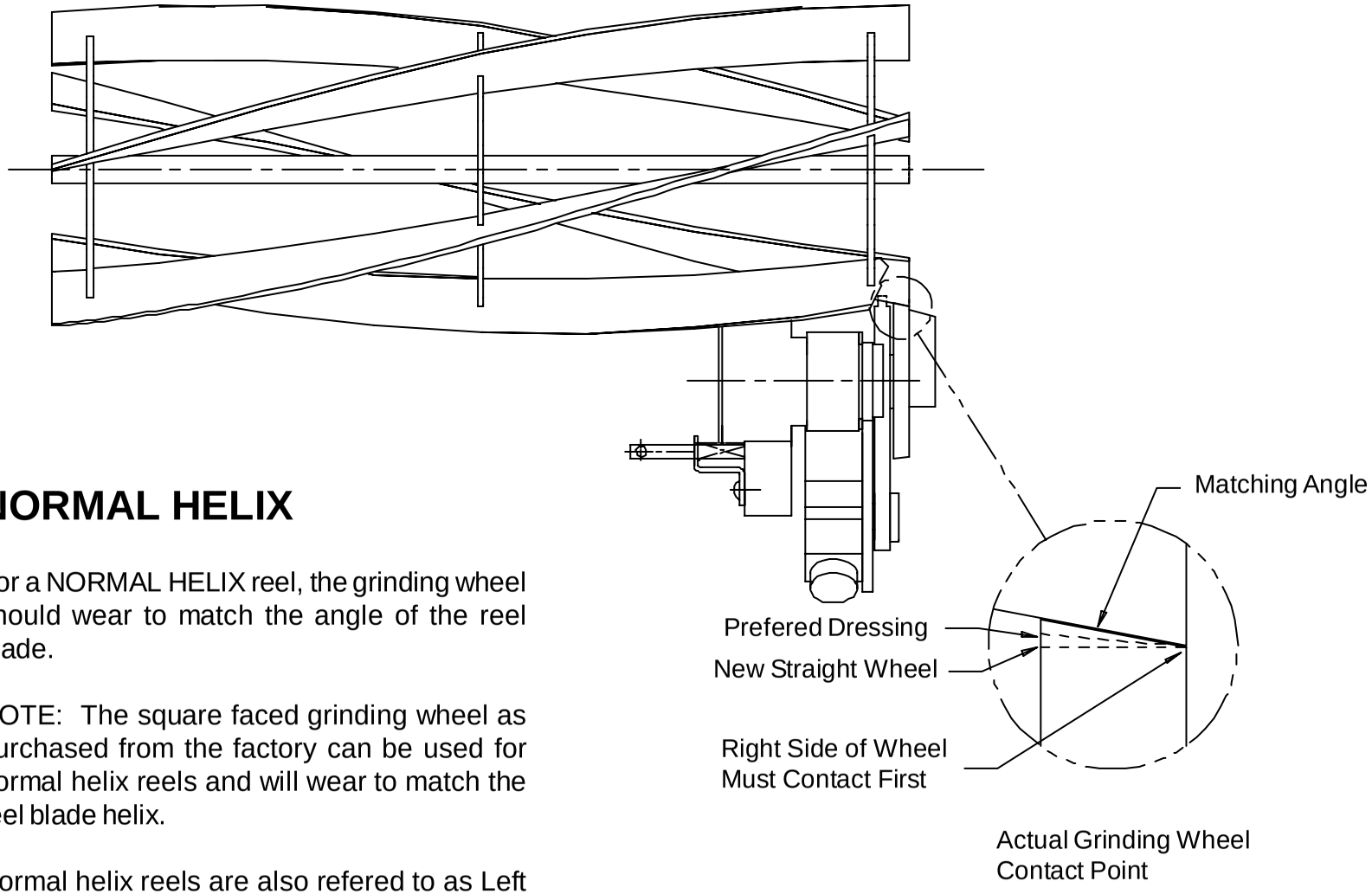


**FIG.23**

For dressing the spin grinding wheel, put the dresser in the straight position. Close the doors and infeed the spin grinding wheel into the dresser and then move the grinding wheel side to side against the dresser which will dress the full face of the wheel.

Typically only infeed .002" [.05 mm] per pass. Infeeding too heavy can damage the dresser or the wheel. Continue dressing until the wheel looks new or the proper shape is achieved.

For dressing the relief wheel, put the dresser at the correct angle for normal helix reel or reverse helix reel. Close the doors and infeed the relief grinding wheel into the dresser. Do **NOT** move the grinding wheel from side to side.

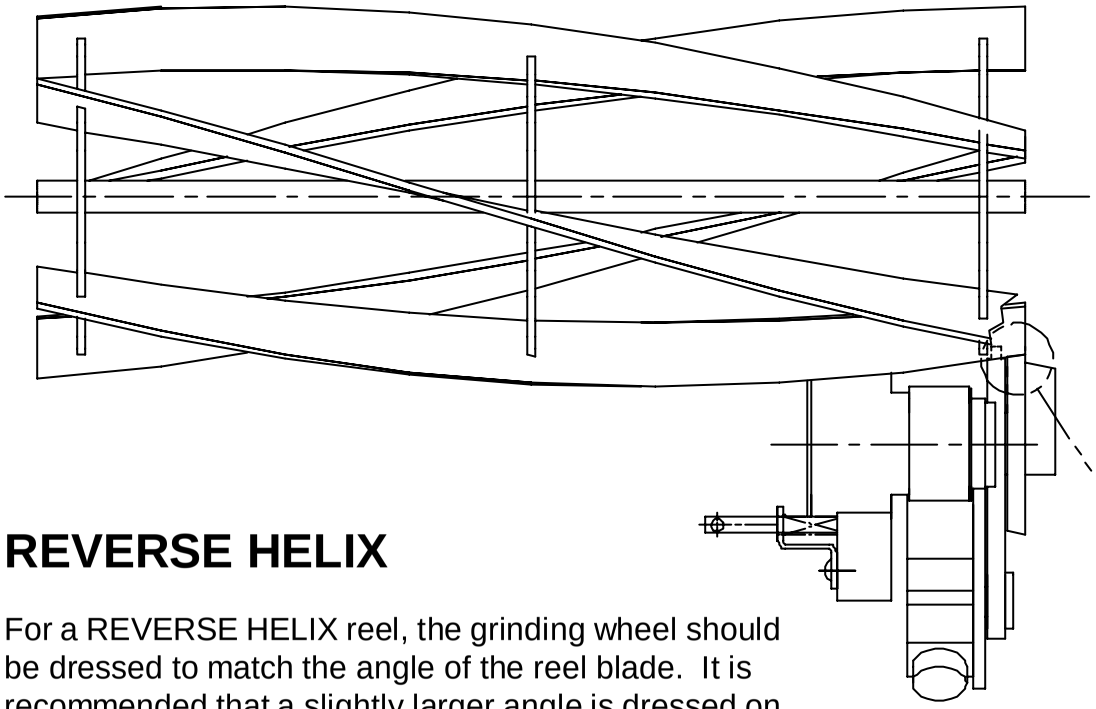


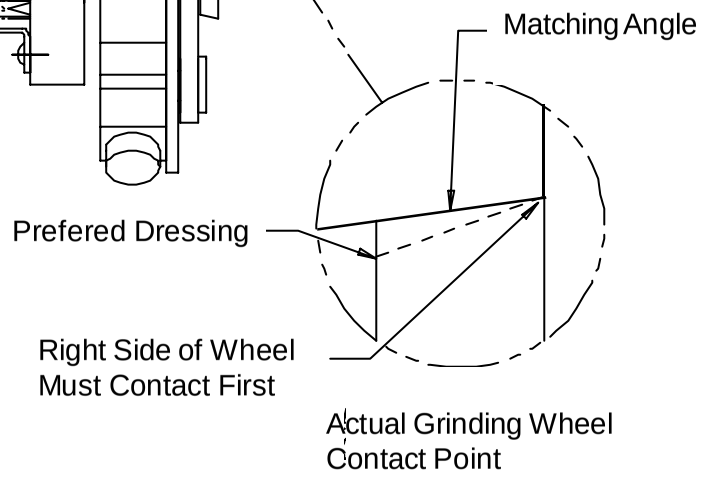

## NORMAL HELIX

For a NORMAL HELIX reel, the grinding wheel should wear to match the angle of the reel blade.

NOTE: The square faced grinding wheel as purchased from the factory can be used for normal helix reels and will wear to match the reel blade helix.

Normal helix reels are also refered to as Left Hand Side Cutting First (Looking from front - grass entry position.) or Right Throw reels (Throws grass to the right of operator position.)






## REVERSE HELIX

For a REVERSE HELIX reel, the grinding wheel should be dressed to match the angle of the reel blade. It is recommended that a slightly larger angle is dressed on the wheel so the right side of the wheel is contacting the blade prior to the left side as shown. The grinding wheel will then wear to a match.

If you do not dress the grinding wheel so the right side contacts first you may not relief grind part of the last 3/8" [10 mm] of the blade.

**NOTE:** A wheel that has been worn to match a normal helix can generally be removed and reversed to grinder reverse helix. reels.

Reverse helix reels are also refered to as Right Side Cutting First reels (Looking from the front - grass entry side) or Left Throw reels (Throws grass to the left of the operator position.)

**RELIEF GRINDING CONTINUED**

Reset the Traverse Limit Proximity Switch so the grinding wheel clears the reel at both ends by approximately 1/16" [1.5 mm].

Set Grind Selector switch to variable torque relief. (**IMPORTANT:** The Spin Drive Rotation switch must be in the **OFF** position when changing the Grind Selector switch.) Set the Spin Drive Rotation switch to rotate the reel into the stop finger, counterclockwise (CCW) when looking at the right side. **NOTE:** Relief torque reel rotation is always opposite spin rotation. DO NOT TURN ON THE SPIN MOTOR SWITCH.

With the traverse in the home position (right side traverse proximity sensor lit), infeed the grinding relief wheel up while manually rotating the reel until the index finger touches the blade.

Turn the traverse speed potentiometer to zero, then turn the traverse drive motor on. With the belt drive disengaged, manually move the Relief Grinding Assembly to the left until the reel blade is on the fixed relief finger.

At this point, if necessary, you can adjust the relief angle by adjusting the relief finger position. To make this adjustment loosen the Relief Angle Adjustment handle. See FIG 24. Rotating the finger system down will increase the relief angle and rotating the finger system up will decrease the relief angle. Adjusting the relief angle or index finger stop position is easiest with the relief head at the left side of the reel.

Once you have the Grinding Head positioned with a reel blade resting on the Fixed Relief Finger high point, adjust the indexing finger stop. There should be about 1/32" [.8mm] to 1/16" [1.5mm] free play of the Index Finger to the back of the blade. The Index Finger is spring loaded to the up position or against the back of the reel blade. To check free play, push down on the Index Finger. See FIG 24. If there is no free play of the Index Finger you want to rotate the Adjustable Index Finger Stop Position Knob counter clockwise. If there is more than 1/16" [1.5 mm] free play you want to rotate the Index Finger Stop Position Knob clockwise.

IMPORTANT: The Index Finger position must be set to stop the reel blade and allow traversing to the left without the blade hitting the side of the relief finger. This position must also allow approximately 1/32" [.8 mm] free play of the index finger when the blade is resting on the high point of the relief finger. See FIG. 24.

Infeed the grinding wheel up until there is minimal clearance between the reel blade and the grinding wheel.

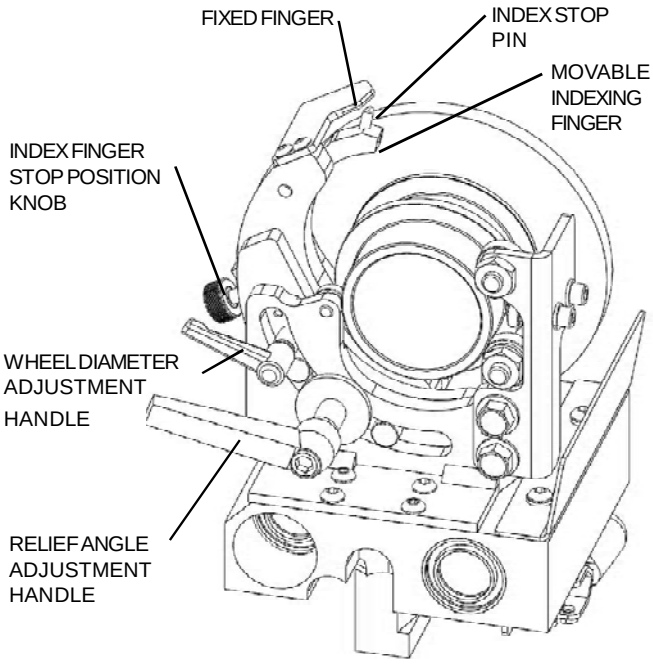



FIG 24.

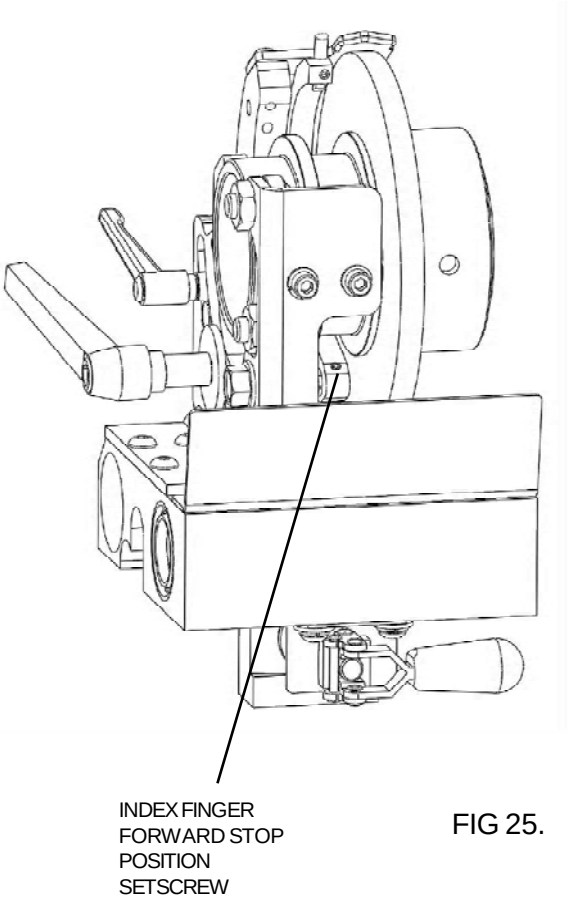



FIG 25.

**RELIEF GRINDING CONTINUED**

Close the front and rear doors.

Turn the Spin Motor Switch on.

**NOTE:** The spin drive will apply torque load against the fingers.

Set the Relief Torque Potentiometer at approximately 15. **IMPORTANT:** Free turning reels may need a lower value than 15 and stiff reels or reels with a drive train may need a higher torque than 15.

Engage the traverse belt and traverse all the way to the left watching for proper clearance between the grinding wheel and the blade. Check for proper clearance between the index finger (after releasing from blade at far left position) and the front side of the blade on the return trip to the home position. Also verify clearance to the reel blade support spiders. If necessary the forward stop can be adjusted. See FIG 25.

Stop the traverse in home position and check for a proper blade index. The traverse drive control is factory set with a two second dwell time before it reverses the carriage travel. This is to allow time for the reel to rotate and the index finger to catch the next blade. If necessary the dwell time can be adjusted (refer to Control Board Potentiometer Adjustments section in the Assembly and Service Manual).

Turn on the Spin Drive Motor (should already be on) and the Grinding Wheel Motor switch.

Turn the traverse speed potentiometer to proper grinding speed. Slowly infeed the grinding wheel until you are able to grind the full length of the reel evenly. A typical infeed is between .010" to .020" [.25-.50 mm]. Be sure you have ground all the blades before infeeding further.

**NOTE:** Traverse speed should be set to approximately 15 fpm. If you are removing a small amount of stock on initial infeeds, faster traverse speeds are suggested. If you are removing a large amount of stock on later infeeds, slower traverse speed may be required.

After the relief grind is complete remove turn all switches to off (it is also good practice to push in the E-stop button) then remove cutting unit from the machine. Use caution as the reel blades will be sharp.

# REEL SETUP CHART

Note: These dimensions will vary due to reel position in frame, reel dia., height of cut, roller position, etc. Use these values as a guide only.

| REEL MAKE, MODEL & HEIGHT OF CUT | FRONT TOOLING MOUNT TYPE | FRONT TOOLING MOUNT POSITION | TOOLING DISTANCE APART | SPIN DRIVE MOUNTING SIDE R OR L | SPIN DRIVE POSITION | SPIN SPEED SETTING | SPIN TORQUE SETTING | TRAVERSE SPEED SETTING | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
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FRONTIER
EQUIPMENT

# ASSEMBLY AND SERVICE MANUAL

# SPIN / RELIEF
# REEL MOWER GRINDER

## RG5500


FRONTIER EQUIPMENT™

(REV. 6/20/2011)

## DEALER PREPARATION/INSTALLATION CHECK LIST IS LOCATED IN THE OPERATOR'S MANUAL

SEE OPERATOR'S MANUAL FOR INSTALLTION CHECKLIST

It is the responsibility of the dealer to complete the procedures listed in the Operators Manual then review this checklist with the customer upon the delivery or the sale of this equipment.The installation training goes over the basic operational functions of the equipment. To ensure adequate training, we require that the following items are reviewed by your John Deere Dealer. Please check off to ensure that you understand the following items before the installation training is complete:

# Safety

IMPORTANT SAFETY MESSAGE FOR OWNERS/OPERATORS OF REEL GRINDERS

Safety is a primary concern in the design, manufacture, sale, and use of reel grinders. As a manufacturer of reel grinders, we want to confirm to you, our customers, our concern for safety. We also want to remind you about the simple, basic, and common sense rules of safety when using a reel grinder. Failure to follow these rules can result in severe injury or death to operators or bystanders.

It is essential that everyone involved in the assembly, operation, transport, maintenance, and storage of this equipment be aware, concerned, prudent, and properly trained in safety. Always use proper shielding as specified by the manufacturer.

Our current production machines include, as standard equipment, guards or shields for the grinding wheel, safety signs and an operator's manual. Never bypass or operate the machine with any of the guards or the safety devices removed.

**Read and fully understand all the safety practices discussed on pages 4 and 5 of this manual. All safety rules must be understood and followed by anyone who works with reel grinders.**

Before operating a reel grinder, an operator must read and understand all of the information in the operator's manual and in the safety signs attached to the product. A person who has not read or understood the operator's manual and safety signs is not qualified to operate the unit. Accidents occur often on machines that are used by someone who has not read the operator's manual and is not familiar with the equipment. If you do not have an operator's manual or the current production safety signs, contact the manufacturer or your dealer immediately.

Reel grinders are designed for one-man operation. Never operate the grinder with anyone near, or in contact with, any part of the grinder. Be sure no one else, including bystanders, are near you when you operate this product.

Following these simple, basic safety rules, as well as others identified in the owner's manual and in the product safety signs, will help minimize the possibility of accidents and increase your productivity in using this product. Be careful and make sure that everyone who operates the grinder knows and understands that this is a very powerful piece of machinery, and if used improperly, serious injury or death may result. The final responsibility for safety rests with the operator of this machine.

**TO THE DEALER:**

Assembly and proper installation of this product is the responsibility of the John Deere dealer. Read manual instructions and safety rules. Make sure all items on the Preparation Check List in the Operator's Manual are completed before releasing equipment to the owner.

**TO THE OWNER:**

Read the Operator's Manual before operating your Frontier equipment. Keep this and all manuals handy for ready reference. Require all operators to read the Operator's Manual carefully and become acquainted with all adjustments and operating procedures before attempting to operate the equipment. Replacement manuals can be obtained from your selling dealer.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Please observe all safety information in the Operator's Manual and safety decals on the equipment.

For service, your authorized John Deere dealer has trained mechanics, genuine Frontier service parts, and the necessary tools and equipment to handle all of your service needs.

Use only genuine Frontier service parts.

# SAFETY INSTRUCTIONS

***Safety Awareness Symbols*** are inserted into this manual to alert you to possible ***Safety Hazards***. Whenever you see these symbols, follow their instructions.

The ***Warning Symbol*** identifies special instructions or procedures which, if not correctly followed, could result in personal injury.

The ***Caution Symbol*** identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.

1. **KEEP GUARDS IN PLACE** and in working order.

2. **REMOVE WRENCHES AND OTHER TOOLS.**

3. **KEEP WORK AREA CLEAN.**

4. **DON'T USE IN DANGEROUS ENVIRONMENT.** Don't use Grinder in damp or wet locations. Machine is for indoor use only. Keep work area well lit.

5. **KEEP ALL VISITORS AWAY.** All visitors should be kept a safe distance from work area.

6. **MAKE WORK AREA CHILD-PROOF** with padlocks or master switches.

7. **DON'T FORCE THE GRINDER.** It will do the job better and safer if used as specified in this manual.

8. **USE THE RIGHT TOOL.** Don't force the grinder or an attachment to do a job for which it was not designed.

9. **WEAR PROPER APPAREL**. Wear no loose clothing, gloves, neckties, or jewelry which may get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.

10. **ALWAYS USE SAFETY GLASSES.**

11. **SECURE YOUR WORK.** Make certain that the cutting unit is securely fastened with the clamps provided before operating.

12. **DON'T OVERREACH.** Keep proper footing and balance at all times.

13. **MAINTAIN GRINDER WITH CARE.** Follow instructions in Service Manual for lubrication and preventive maintenance.

14. **DISCONNECT POWER BEFORE SERVICING,** or when changing the grinding wheel.

15. **REDUCE THE RISK OF UNINTENTIONAL STARTING.** Make sure all switches are **OFF** before plugging in the grinder.

16. **USE RECOMMENDED ACCESSORIES**. Consult the manual for recommended accessories. Using improper accessories may cause risk of personal injury.

17. **CHECK DAMAGED PARTS.** A guard or other part that is damaged or will not perform its intended function should be properly repaired or replaced.

18. **KNOW YOUR EQUIPMENT.** Read this manual carefully. Learn its application and limitations as well as specific potential hazards.

19. **KEEP ALL SAFETY DECALS CLEAN AND LEGIBLE.** If safety decals become damaged or illegible for any reason, replace immediately. Refer to replacement parts illustrations in Service Manual for the proper location and part numbers of safety decals.

20. **DO NOT OPERATE THE GRINDER WHEN UNDER THE INFLUENCE OF DRUGS, ALCOHOL, OR MEDICATION.**

# SAFETY INSTRUCTIONS

IMPROPER USE OF GRINDING WHEEL MAY CAUSE BREAKAGE AND SERIOUS INJURY.

Grinding is a safe operation if the few basic rules listed below are followed. These rules are based on material contained in the ANSI B7.1 Safety Code for "Use, Care and Protection of Abrasive Wheels". For your safety, we suggest you benefit from the experience of others and follow these rules.

## DO

1. **DO** always **HANDLE AND STORE** wheels in a careful manner.
2. **DO VISUALLY INSPECT** all wheels before mounting for possible damage.
3. **DO CHECK MACHINE SPEED** against the established maximum safe operating speed marked on wheel.
4. **DO CHECK MOUNTING FLANGES** for equal and correct diameter.
5. **DO USE MOUNTING BLOTTERS** when supplied with wheels.
6. **DO** be sure **WORK REST** is properly adjusted.
7. **DO** always **USE A SAFETY GUARD COVERING** at least one-half of the grinding wheel.
8. **DO** allow **NEWLY MOUNTED WHEELS** to run at operating speed, with guard in place, for at least one minute before grinding.
9. **DO** always **WEAR SAFETY GLASSES** or some type of eye protection when grinding.

## DON'T

1. **DON'T** use a whee that is cracked, **HAS BEEN DROPPED,** or one that is damaged.
2. **DON'T FORCE** a wheel onto the machine **OR ALTER** the size of the mounting hole--if wheel won't fit the machine, get one that will.
3. **DON'T** ever **EXCEED MAXIMUM OPERATING SPEED** established for the wheel.
4. **DON'T** use mounting flanges on which the bearing surfaces **ARE NOT CLEAN, FLAT AND FREE OF BURRS.**
5. **DON'T TIGHTEN** the mounting nut **EXCESSIVELY.**
6. **DON'T** grind on the **SIDE OF THE WHEEL** (see Safety Code B7.2 for exception).
7. **DON'T** start the machine until the **WHEEL GUARD IS IN PLACE.**
8. **DON'T JAM** work into the wheel.
9. **DON'T STAND DIRECTLY IN FRONT** of a grinding wheel whenever a grinder is started.
10. **DON'T FORCE GRINDING** so that motor slows noticeably or work gets hot.

AVOID INHALATION OF DUST generated by grinding and cutting operations. Exposure to dust may cause respiratory ailments. Use approved NIOSH or MSHA respirators, safety glasses or face shields, and protective clothing. Provide adequate ventilation to eliminate dust, or to maintain dust level below the Threshold Limit Value for nuisance dust as classified by OSHA.

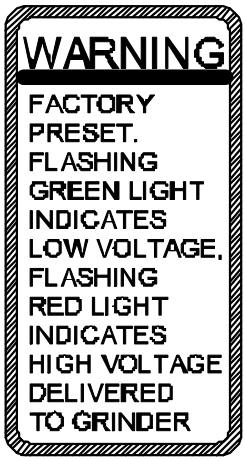
# TABLE OF CONTENTS

**This machine is intended for grinding the reel of reel type mower units <u>ONLY.</u> Any use other than this may cause personal injury and void the warranty.**

**To assure the quality and safety of your machine and to maintain the warranty, you MUST use original equipment manufactur's replacement parts and have any repair work done by a qualified professional.**

**ALL operators of this equipment must be thoroughly trained BEFORE operating the equipment.**

**Do not use compressed air to clean grinding dust from the machine. This dust can cause personal injury as well as damage to the grinder. Machine is for indoor use only. Do not use a power washer to clean the machine.**




### Low Voltage Relay

The grinder is equipped with a high-low voltage relay which is factory preset at 100-140 VAC. If the power supply line does not deliver 100-140 VAC power under load, the relay will open and trip out the starter. If this occurs, your power supply line is incorrect and must be corrected before proceeding further with the grinder.

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## DAILY MAINTENANCE BY THE OPERATOR

On a daily basis, clean the machine by wiping it off.
On a daily basis, remove all grinding grit from the grinding shaft, traverse shafts, and tooling bar area.
On a daily basis, inspect the machine for loose fasteners or components.
Contact your company's Maintenance Department if damaged or defective parts are found.

**DO NOT USE COMPRESSED AIR TO CLEAN GRINDING DUST FROM GRINDER**

## SKILL AND TRAINING REQUIRED FOR SERVICING

This Service Manual is designed for technicians who have the necessary mechanical and electrical knowledge and skills to reliably test and repair the RG5500 Spin/Relief Grinder. For those without this background, service can be arranged through your local dealer.

This section presumes that you are already familiar with the normal operation of the grinder. If not, you should read the operators manual, or do the servicing in conjunction with someone who is familiar with its operation.

Persons without the necessary knowledge and skills should not remove any panels, shields or attempt any internal troubleshooting, adjustments, or parts replacement.

If you have questions not answered in this manual, please contact your dealer.

## TORQUE REQUIREMENTS

Throughout this manual we refer to torque requirements as "firmly tighten" or the like. For more specific torque values, refer to the information below.

**Bolts Going Into a Nut, or Into a Thread Hole in Steel.**
Refer to the table at the right.

**Bolts Going Into a Thread Hole In Aluminum**
Use the Grade 2 values in the table at the right.

**Socket-Head Screws Going Into a Nut or Steel**
Use the Grade 8 values in the table at the right.

**Machine Screws**
No. 6 screws: 11 in.- lbs (0.125kg - m)
No. 8 screws: 20 in. - lbs (0.23 kg - m)
No. 10 screws: 32 in. - lbs (0.37 kg - m)

| | GRADE 2 | GRADE 5 | GRADE 8 |
|---|---|---|---|
| |  |  |  |
| | SMOOTH HEAD | 3 MARKS on HEAD | 6 MARKS on HEAD |
| **1/4 In. thread** | 6 ft-lbs (0.8 kg-m) | 9 ft-lbs (1.25 kg-m) | 13 ft-lbs (1.8 kg-m) |
| **5/16 In. thread** | 11 ft-lbs (1.5 kg-m) | 18 ft-lbs (2.5 kg-m) | 28 ft-lbs (3.9 kg-m) |
| **3/8 In. thread** | 19 ft-lbs (2.6 kg-m) | 31 ft-lbs (4.3 kg-m) | 46 ft-lbs (6.4 kg-m) |
| **7/16 In. thread** | 30 ft-lbs (4.1 kg-m) | 50 ft-lbs (6.9 kg-m) | 75 ft-lbs (10.4 kg-m) |
| **1/2 In. thread** | 45 ft-lbs (6.2 kg-m) | 75 ft-lbs (10.4 kg-m) | 115 ft-lbs (15.9 kg-m) |

# ASSEMBLY INSTRUCTIONS

Remove the sides, front, and back of the crate. Remove the plastic bag, shrink wrap and bubble wrap. Remove the metal clips that secure the grinder to the crate base. With a fork lift, raise the grinder from the wood base and set it in its final position. See FIG. 1 and 2.

**THE UNIT WEIGHS 1200 LBS. [544 kg]. TO LIFT, USE POWER EQUIPMENT.**

Remove shipping straps and window protective sheets.

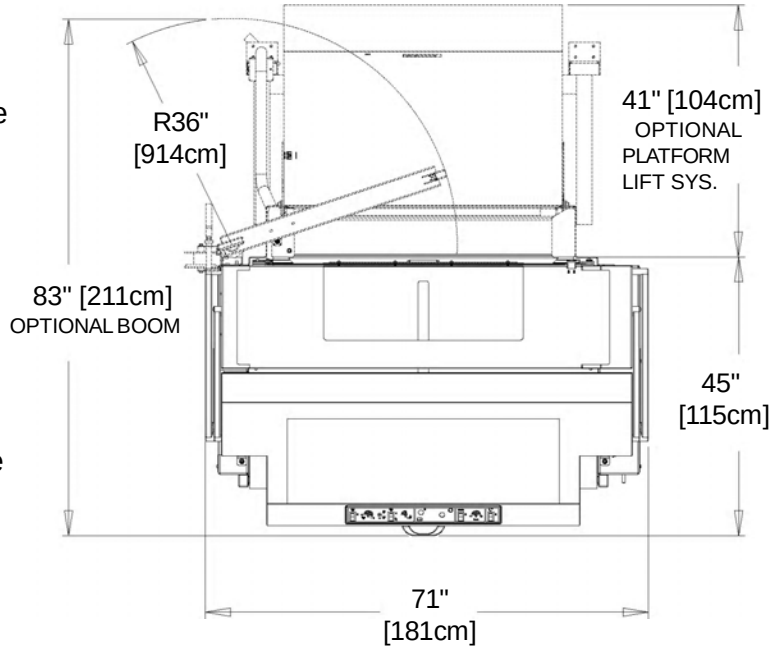



**FIG. 1**

## POSITION BASE

The RG5500 Spin/Relief Grinder will require an operating area of about 119" W x 127" D x 90" H (302 cm x 323cm x 229 cm). The machine operator will operate the unit from the front of the machine. Position the base to allow sufficient operating room in front and to the rear of the machine. See FIG. 1 and 2.

The base should be placed on a relatively level concrete floor, with ample ceiling height to allow for the installation of the unit. Do not place the unit across two concrete slab seams or across a large crack.

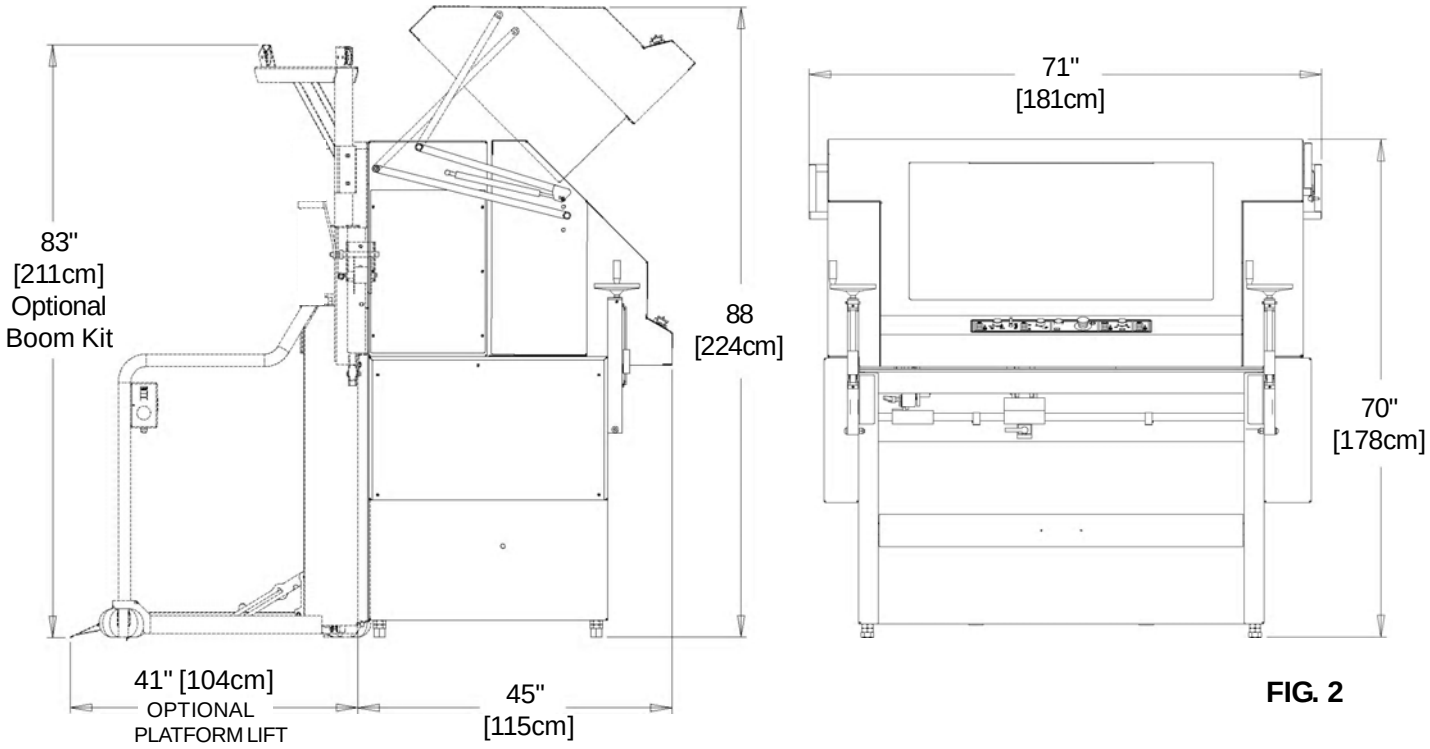
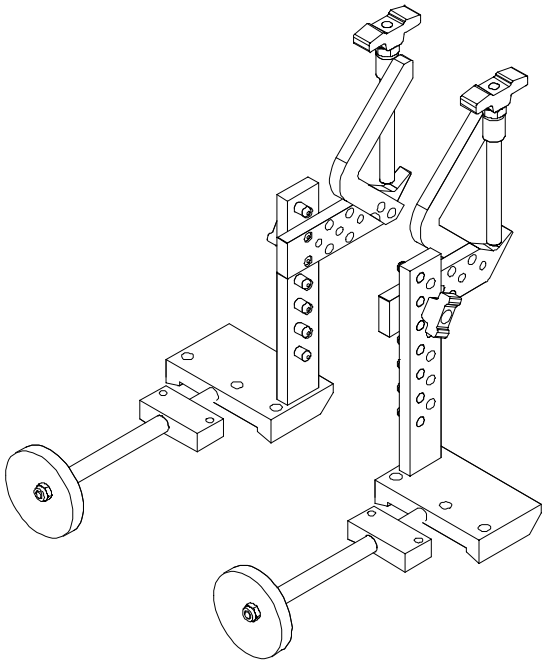


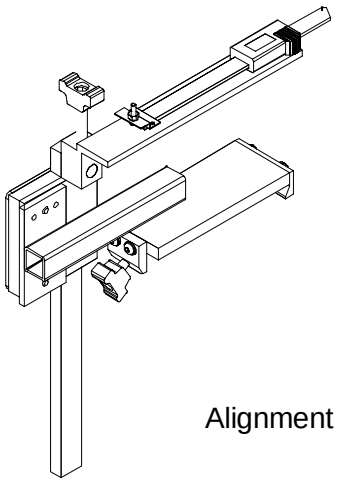

**FIG. 2**

## ASSEMBLY INSTRUCTIONS (Continued)

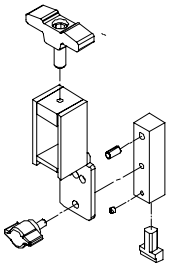
Remove the carton and remove the contents from the carton onto a workbench. The carton includes:



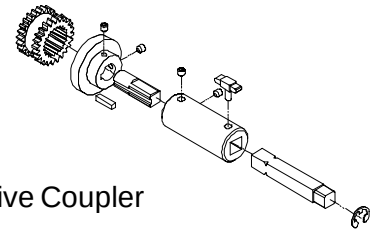
Multi position Brackets



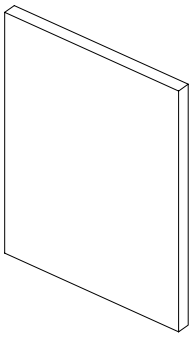
Alignment Gage



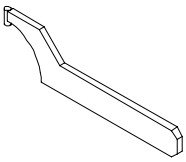
Diamond Dresser



Drive Coupler



Product Packet Assembly
(Operators & Service Manuals)



Spanner Wrench

## LEVEL BASE

Place a level on the top of the table and check the unit for level side to side. Adjust the leveling feet as necessary until the machine is level.
See FIG. 3 and 4.

Place a level across the table from front to rear. Adjust the leveling feet as necessary until the machine is level. See FIG. 3 and 5.

When both front to back and side to side leveling procedures have been completed, thread the hex jam nuts up against the nut that is welded to the bottom of the machine. Be careful not to move the leveling feet during when tightening the jam nut. See FIG. 3. Make certain that all four leveling feet are firmly contacting the floor.

Recheck that the machine is level after locking the four feet into position.

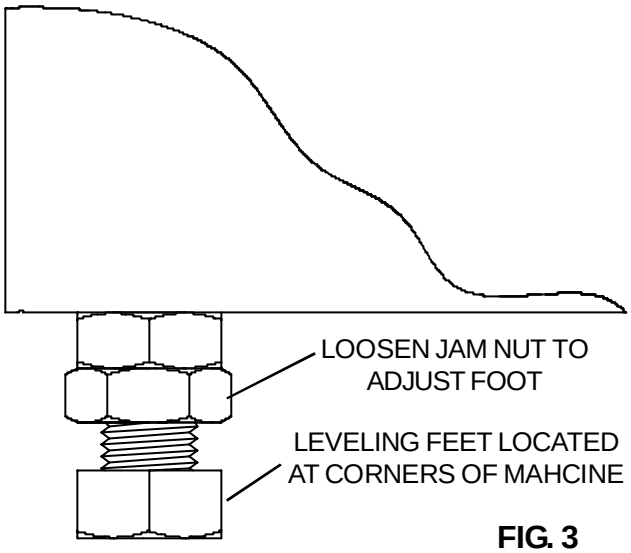



**FIG. 3**

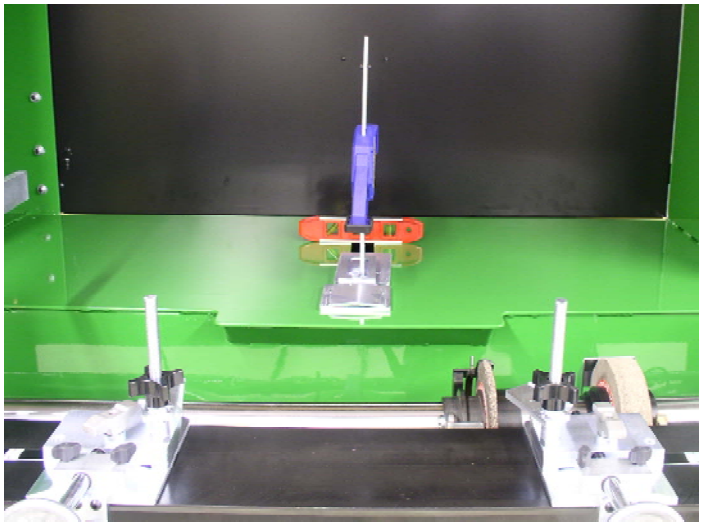


**FIG. 4**

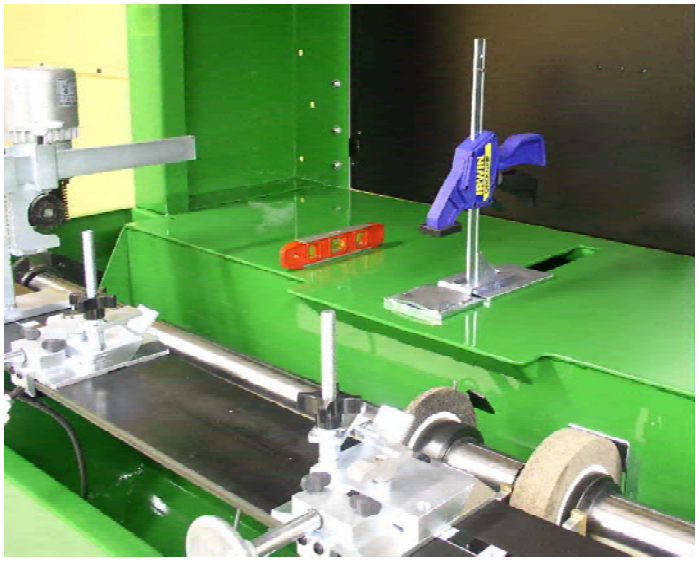


**FIG. 5**

# ASSEMBLY INSTRUCTIONS (Continued)

**IMPORTANT GROUNDING INSTRUCTIONS**

In case of a malfunction or breakdown, grounding reduces the risk of electrical shock by providing a path of least resistance for electrical current.

This Grinder has an electrical cord with an equipment grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded according to all local or other appropriate electrical codes and ordinances.

Before plugging in the Grinder, make sure it will be connected to a supply circuit protected by a properly sized circuit breaker or fuse. SEE SERIAL NUMBER PLATE FOR FULL LOAD AMP RATING OF YOUR MACHINE.

Never modify the plug provided with the machine--if it won't fit the outlet, have a proper outlet and circuit installed by a qualified electrician.

**ALWAYS PROVIDE A PROPER ELECTRICAL GROUND FOR YOUR MACHINE. AN IMPROPER CONNECTION CAN CAUSE A DANGEROUS ELECTRICAL SHOCK. IF YOU ARE UNSURE OF THE PROPER ELECTRICAL GROUNDING PROCEDURE, CONTACT A QUALIFIED ELECTRICIAN.**

**APPLY POWER**

**BEFORE YOU APPLY POWER TO THE GRINDER, REFER TO THE "IMPORTANT GROUNDING INSTRUCTIONS" ON PREVIOUS PAGE.**

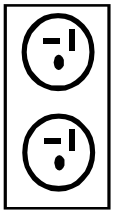


**FIG. 6**

**P**lug the control box power cord into a standard 115V AC 20-amp grounded receptacle. See FIG. 6.

**IT IS RECOMMENDED THAT THIS SPIN/RELIEF GRINDER HAS ITS OWN PERMANENT POWER CONNECTION FROM THE POWER DISTRIBUTION PANEL, WITH NO OTHER MAJOR POWER DRAW EQUIPMENT ON THE SAME LINE.**

**IT IS REQUIRED THAT THE POWER DELIVERED TO THIS GRINDER IS 115 VAC - 20 AMPS. THE TOLERANCE ON THIS POWER REQUIREMENT IS +/- 5%. THEREFORE THE MINIMUM VOLTAGE REQUIREMENT IS 109VAC WITH 20 AMPS. VOLTAGE MUST BE CHECKED WITH ALL EQUIPMENT UNDER LOAD (OPERATING) ON THE CIRCUIT.**

**DO NOT OPERATE THIS GRINDER WITH AN EXTENSION CORD.**

**DO NOT OPERATE THIS GRINDER ON A GROUND FAULT**

**A PROPER GROUND IS REQUIRED FOR SAFE OPERATION OF THE EQUIPMENT. VERIFY THAT THE RECEPTACLE GROUND IS A PROPER GROUND BEFORE PLUGGING IN THE MACHINE.**

**IMPROPER GROUNDING IN YOUR BUILDING MAY RESULT IN A DANGEROUS SHOCK TO THE OPERATOR OR CAUSE THE GRINDER TO MALFUNCTION.**

The grinder is equipped with a high-low voltage relay which is factory preset at 100-140 VAC. If the power supply line does not deliver 100-140 VAC power under load, the relay will open and trip out the starter. If this occurs, your power supply line is incorrect and must be correct before proceeding further with the grinder.


When installing the grinder, the following guidelines should be used to establish the wire size between the power panel in your building and the grinder receptacle. Note that the wiring in your building must be per code between main power panels and sub panels.

**FOR 20 AMP RATED LARGE MACHINES**

For 0 to 40 Feet (0 to 12 M) from panel to receptacle = Use 12 Ga. (4.0 mm) Wire.
For 40 to 60 Feet (12 to 18 M) from panel to receptacle = Use 10 Ga. (6.0 mm) Wire.
For 60 to 100 Feet (18 to 30 M) from panel to receptacle = Use 8 Ga. (10.0 mm) Wire.
For 100 to 160 Feet (30 to 48 M) from panel to receptacle = Use 6 Ga. (16.0 mm) Wire.

# PERIODIC MAINTENANCE

DAILY MAINTENANCE IS SPECIFIED ON PAGE 6, AND IS TO BE PERFORMED BY THE OPERATOR.

LISTED BELOW ARE PERIODIC MAINTENANCE ITEMS TO BE PERFORMED BY YOUR COMPANY'S MAINTENANCE DEPARTMENT:

1. Clean the dust tray located at the lower front of the machine monthly using a vacuum or by removing it. Pull the tray out until the back of the tray is even with the front of the frame and vacuum it out. To remove continue to pull straight out until the tray is free.

**USE CAUTION WHEN PULLING THE TRAY OUT AS THERE IS NO MECHANICAL STOP. WHEN REMOVING TRAY PULL STRAIGHT OUT AND SUPPORT THE TRAY TO PREVENT DUMPING.**

2. Inspect the Poly-V belt on the grinding motor for cracking and make any necessary adjustments every three months.

3. Wipe off and lubricate with never-seize, the horizontal adjustment shafts located on the tooling every six months.

4. Wipe off and lubricate with never-seize, the vertical adjustment shafts every six months. Run the arms up and down to coat the working areas of the shaft.

5. Inspect the traverse cog belt for cracking and defects every three months. Remove any grit or dust that may affect the function of the belt. Adjust tension if necessary per procedures called out in the adjustment section. See FIG 9.

6. Clean and lubricate the grinding shaft and traverse shafts every 2 to 4 weeks. Follow the proceedure on the next page.

7. Lubricate grinding shaft bearings with one shot of grease once every 2 years. See FIG 9.

**DO NOT GREASE GRINDING SHAFT BEARINGS FOR THE FIRST 2 YEARS. THEY ARE GREASED AT THE FACTORY. GREASING MAY CAUSE THE BEARINGS TO OVERHEAT AND FAIL PREMATURELY.**

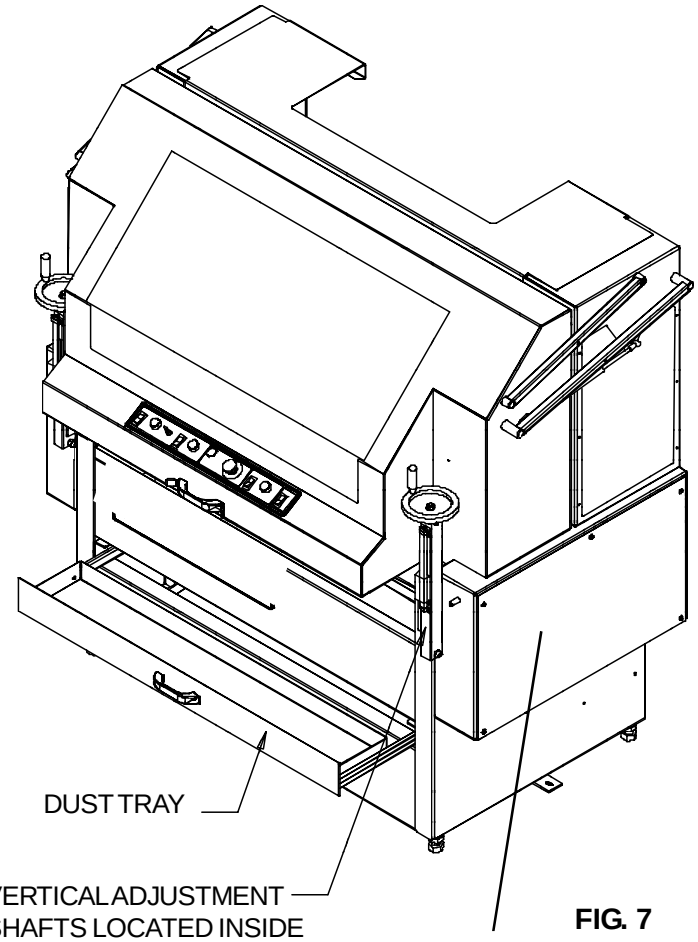



**FIG. 7**

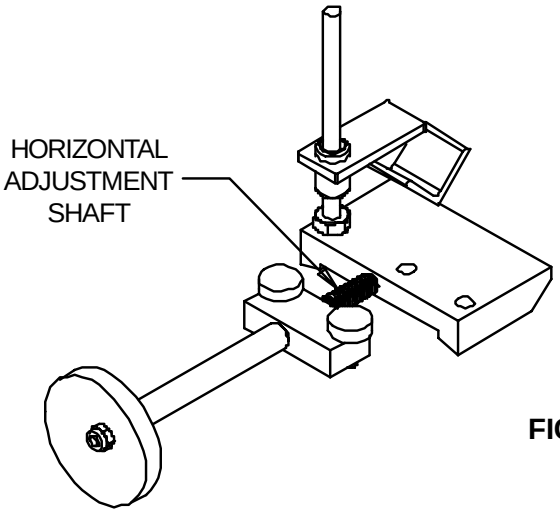



**FIG. 8**

# LUBRICATION

## LUBRICATION OF GRINDING SHAFT AND LINEAR BEARINGS

STEP 1 – Thoroughly clean all three shafts.

STEP 2 – Flood spray all three shafts with CRC 3-36 until the lubricant is dripping off the shafts. **(Do not use a Teflon-based lubricant)** Then run the grinding head assemblies back and forth through their full range of travel. This will remove the dust and deposits from inside the wheel flanges. Repeat if necessary until lubrication is clear of deposits. Clean keyways located on the grinding shaft with soft brush.

STEP 3 – With a clean rag, wipe off the excess amount of lubricant from the shafts. Run the grinding assemblies through their range of travel and wipe the shafts after each traverse. Repeat until the shafts are dry to the feel. This completes the lubrication process.

**IMPORTANT:**
If the unit will be shut down for an extended period of time, more than four weeks, then the shafts and other appropriate parts of the unit should be flooded with lubricant and that lubricant left in place until the unit is brought back into service. When the unit is brought back into service the full lubrication procedure as stated above should be repeated.

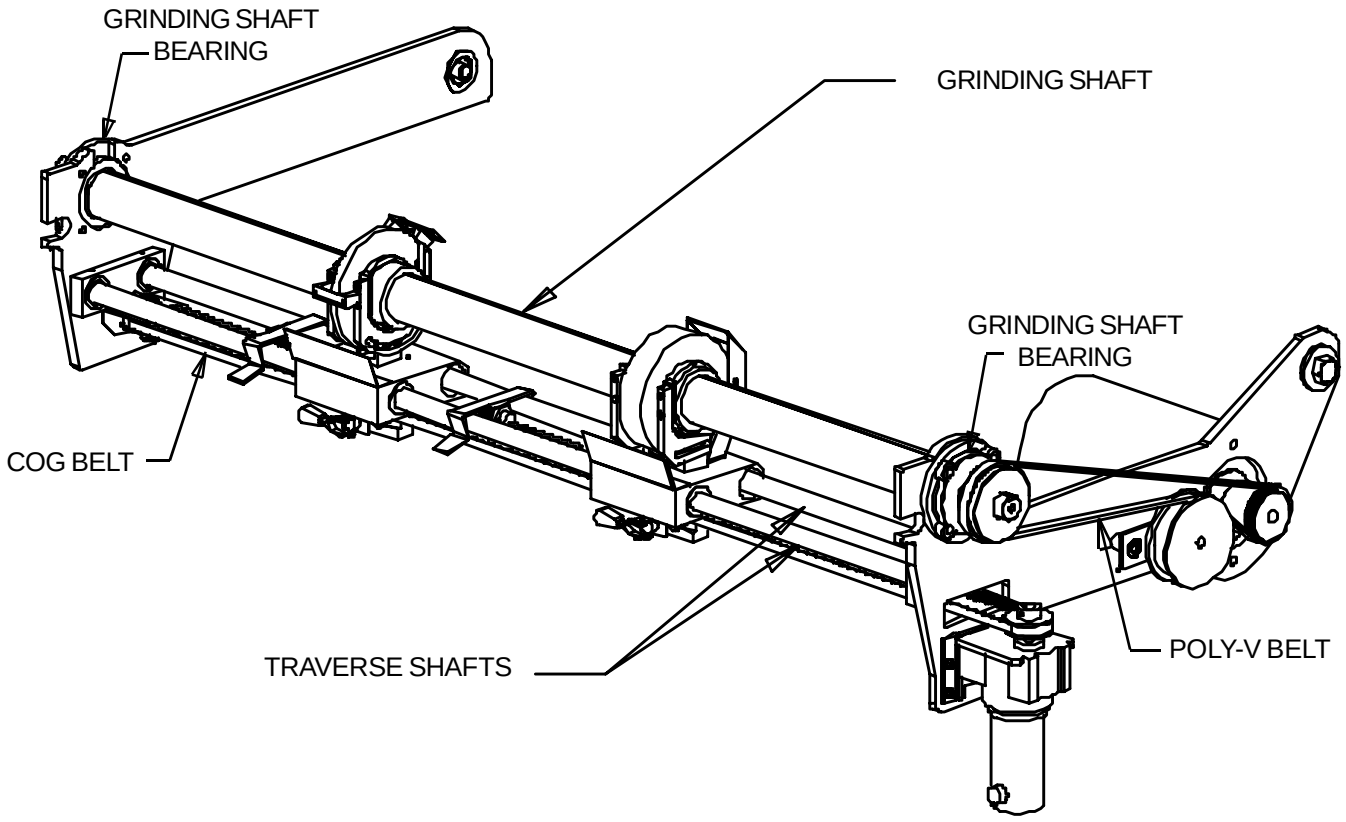



**FIG. 9**

# MAINTENANCE

## REPLACEMENT OF GRINDING WHEEL

To replace the wheel first remove the left side cover panel. Now, lower the left side of the grinding shaft and raise the right side. Next, loosen the two bolts that hold the bearing bracket on the relief hub so that that bearings pivot away from the wheel and hub (toward the front of the machine). See FIG 11. Press the index finger down and the wheel and hub assembly should move freely to the right.

Then remove the left side bearing. First loosen the setscrews on the bearing collar then remove the four screws that hold the bearing to the left arm.

Slide the grinding wheel hub assembly(s) off the shaft taking note of what side the nut is on. Use the spanner wrench to remove and replace the grinding wheel(s).

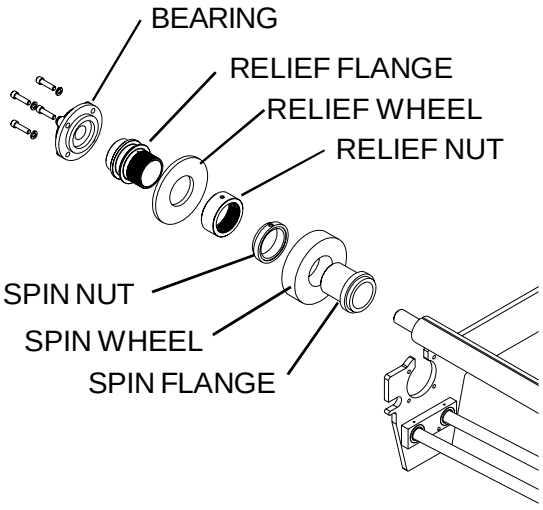
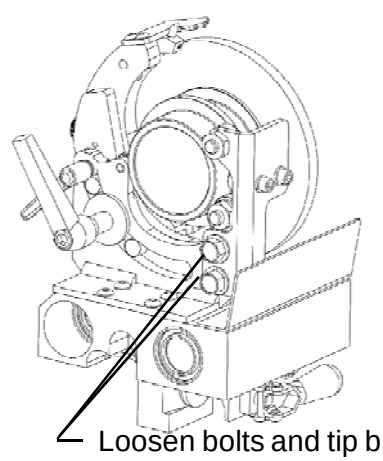



**FIG. 10**

**NOTE: THE <u>RELIEF</u> HUB HAS A <u>LEFT HAND THREAD</u> FOR THE NUT. THE SPIN HUB HAS A RIGHT HAND THREAD.**

Place the grinding wheel hub assembly(s) back on the grinding shaft. Verify that the spin hub is located between the spin drive yoke assembly and the relief hub is to the right of the relief drive assembly before lowering the grinding shaft.

**MAKE SURE THE WHEEL(S) IS PLACED ON THE SHAFT WITH THE SAME ORIENTATION AS SHOWN. FAILURE TO INSTALL CORRECTLY WILL CAUSE THE WHEEL NUT TO LOOSEN. (THE NUT ON THE RELIEF HUB SHOULD BE TO THE RIGHT & THE NUT ON THE SPIN HUB SHOULD BE TO THE LEFT.)**



Loosen bolts and tip bracket back. Press in the indexing finger and the wheel should slide freely to the right.

**FIG. 11**

Reinstall the bearing on the left side of the grinding shaft making sure to fit the pilot on the bearing into arm. Tighten the four mounting screws, and then tighten the setscrews to the shaft. Reinstall the left side cover panel. Move bearing support bracket back into place. See relief hub bearing adjustment to set the bracket correctly.

### GRINDING MOTOR BELT REPLACEMENT/ ALIGNMENT

To replace or inspect the grinding motor belt, remove the right side cover panel. To remove the belt, pull down on the tensioner pulley.

For the belt to function properly the grinding shaft pulley and the grinding motor pulley must be in line with the tensioner pulley. To adjust the pulley position loosen the setscrews on the pulley. Locate the belt in the center of the idler pulley. Measure from the arm to the edge of the belt at the idler pulley. Adjust the two other pulley's until the same measurement is achieved and tighten the pulley setscrews.

Reinstall the right side cover panel, then run the grind motor to assure that the belt is not misaligned. The belt will walk off the pulley if the system is not aligned properly.

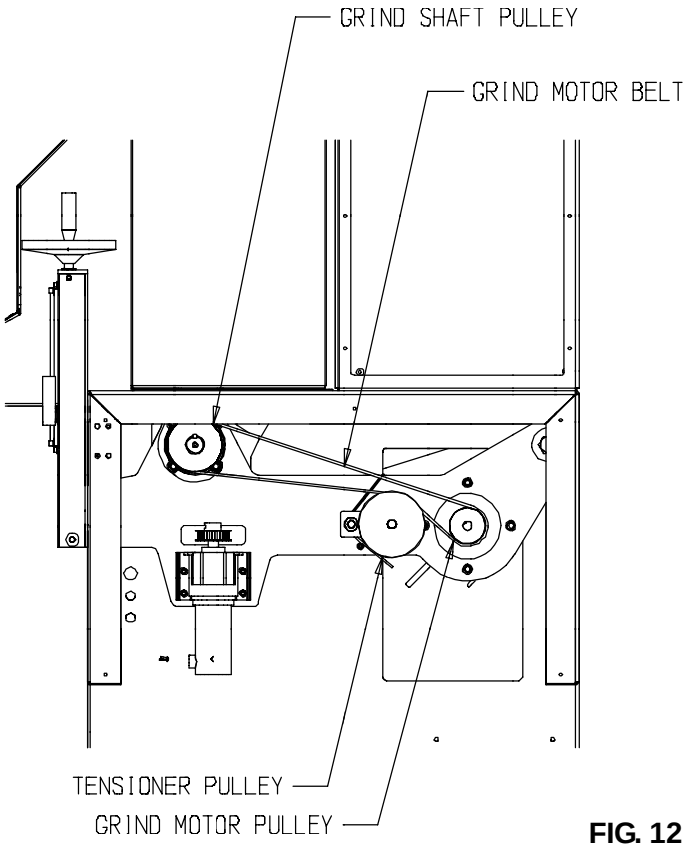



**FIG. 12**

### TRAVERSE BELT REPLACEMENT

To replace the traverse belt, remove the left side cover panel, then loosen the nuts on the left side pulley that are used to tension the belt. Remove the right side cover panel. Loosen the screws holding the traverse motor and tilt the bottom of the motor out releasing any remaining tension on the belt. On the left side remove the nut from the bottom belt tensioning screw, this will allow the belt to be removed.

Place a new belt on the left pulley making sure it is seated properly in the cogged teeth and replace the locknut. Feed the new belt throught the slot on the right arm and place on motor pulley. Use the motor as a lever to apply tension to the new belt. Tighten motor screws and adjust the tension in the belt as specified in the BELT TENSION section. Adjust the height of the motor pulley if necessary so the belt is located in the center of the traverse belt clamp.

Reinstall the left side and right side cover panels, then test the traverse motor.

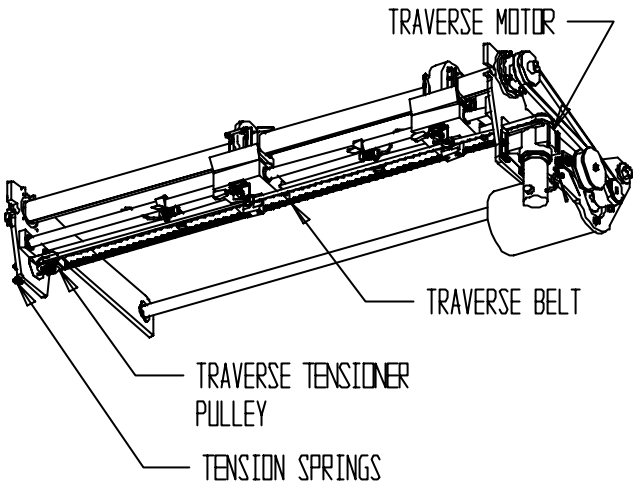



**FIG. 13**

## TRAVERSE SHAFT/LINEAR BEARING REPLACEMENT

To replace the traverse shafts or the linear bearings in the Spin or Relief assembly, first remove the left side cover panel.

REMOVE GRINDING SHAFT:
Next you will need to remove the grinding shaft. First move the relief hub away from the relief hub assemlby (see Replacement of Griniding wheel section for details). Then remove the grinding motor belt and pulley (see Grinding Motor Belt Replacement). Now loosen the setscrews on the right side bearing to allow the grinding shaft to slide out of the bearing. Next remove the left side grinding shaft bearing. The grinding shaft is heavy so take appropriate measures when lifting or removing. To remove the grinding shaft lift up on the left end and slide the shaft out of the right side bearing. Set the shaft on the floor or bench out of the way.

**THE GRINDING SHAFT WEIGHS 75LBS [34 Kg] USE APPROPRIATE LIFTING DEVICES TO AVOID INJURY.**

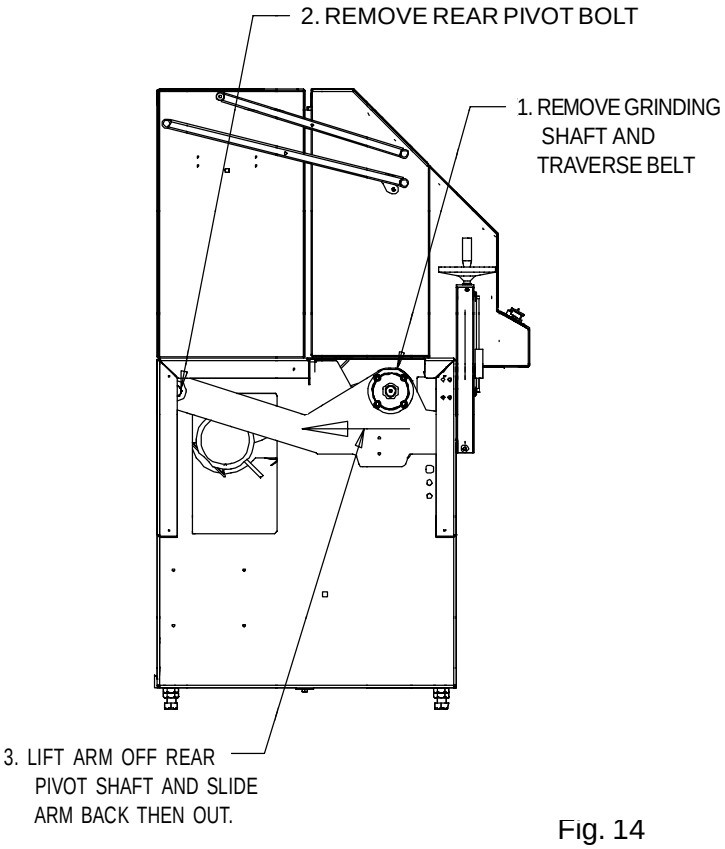



Fig. 14

REMOVE THE TRAVERSE BELT:
(See Traverse Belt Replacement section)

REMOVING THE TRAVERSE SHAFTS:
To remove the traverse shafts use the vertical adjusters to lower both grinding shaft support arms until they are in there lowest position. Now remove the left grindng shaft support arm. To remove the left arm, first remove the bolt at the rear of the machine. (It may be necessary to clamp onto the shaft that the bolt is screwed into so that it does not spin.) After removing the bolt, pull the arm off the rear shaft. Now move the arm toward the rear of the machine to disengage the front of the arm from the vertical adjuster. Next pull the arm away from the grinder and off the traverse shafts. (Note, the shafts may come out of the right side arm so support the shafts.)

Slide the Spin and Relief Grinding Head Assemblies off the traverse shafts.

Replace the shafts if necessary.

REPLACING THE TRAVERSE BEARING:
To replace the traverse bearings, press the bearings out of the bearing housing. Slide in the new bearings and secure in place with the seals. (Two bearings go in the front and 1 bearing the rear of the housing).

TO REASSEMBLE:
Clean the 2 spherical bearings in the right arm and place the traverse shaft into the bearings. (The shafts should slide into the bearings. There is very minimal clearance so the shafts need to be preciesly aligned for the shafts to slide into the bearings.) Next slide the grinding head assemblies (spin first then relief) onto the traverse shafts. Now, clean the bearing in the left arm. Then align the bearings in the left arm to the two traverse shafts. The shafts should slide into the bearings. Reinstall the left arm into the vertical adjuster housing and onto the rear support shaft. Reinstall the rear pivot bolt and tighten. Continue to install the traverse belt, grinding shaft, and grinding motor belt. See the sections on Traverse Belt Replacement, Replacement of Grinding Wheel, Grinding Motor Belt Replacement, Traverse Belt Tension, and Relief Grinding Head Bearing Adjustments for addtional details.

## CLEANING AND MAINTENANCE GUIDELINES FOR POLYCARBONATE WINDOWS

**Cleaning Instructions**

**DO NOT USE GASOLINE**
**Adherence to regular and proper cleaning procedures is recommended to preserve appearance and performance.**

**Washing to Minimize Scratching**

Wash polycarbonate windows with a mild dish washing liquid detergent and lukewarm water, using a clean soft sponge or a soft cloth. Rinse well with clean water. Dry thoroughly with a moist cellulose sponge to prevent water spots. Do not scrub or use brushes on these windows. Also, do not use butyl cellosolve in direct sunlight.

Fresh paint splashes and grease can be removed easily before drying by rubbing lightly with a good grade of VM&P naphtha or isopropyl alcohol. Afterward, a warm final wash should be made, using a mild dish washing liquid detergent solution and ending with a thorough rinsing with clean water.

**Minimizing Hairline Scratches**

Scratches and minor abrasions can be minimized by using a mild automobile polish. Three such products that tend to polish and fill scratches are Johnson paste Wax, Novus Plastic Polish #1 and #2, and Mirror Glaze plastic polish (M.G. M10). It is suggested that a test be made on a corner of the polycarbonate window with the product selected following the polish manufacturer's instructions.

**Some Important "DON'TS"**

- **DO NOT** use abrasive or highly alkaline cleaners on the polycarbonate windows.
- **Never** scrape polycarbonate windows with squeegees, razor blades or other sharp instruments.
- Benzene, gasoline, acetone or carbon tetrachloride should **NEVER** be used on polycarbonate windows.
- **DO NOT** clean polycarbonate windows in hot sun or at elevated temperatures.

**Graffiti Removal**

- Butyl cellosolve, (for removal of paints, marking pen inks, lipstick, etc.)
- The use of masking tape, adhesive tape or lint removal tools works well for lifting off old weathered paints.
- To remove labels, stickers, etc., the use of kerosene, VM&P naphtha or petroleum spirits is generally effective. When the solvent will not penetrate stickier material, apply heat (hair dryer) to soften the adhesive and promote removal.
  **GASOLINE SHOULD NOT BE USED!**

# MAINTENANCE (Continued)

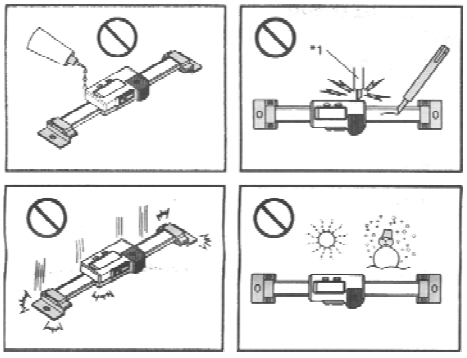
## DIGITAL GAGE

### Important

Do not mark the scale unit with an electric engraver or scratch the scale.

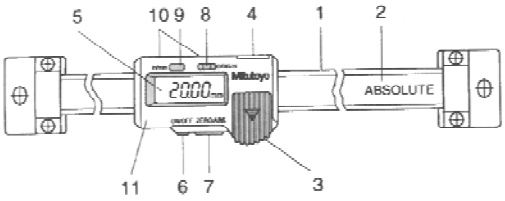
**Always use an SR44 battery (silver oxide cell)**

If the scale will not be used for more than three months, remove the battery and store it properly. Otherwise, leakage, if any, from the battery may damage the unit.



### Description of Parts

1. Beam
2. Main Scale
3. Battery compartment
4. Outp Connection
5. Display
6. ON/OFF Power
7. ZERO/ABS switch
8. Origin Switch
9. Inch/mm Switch
10. Tapped hole
11. Slider

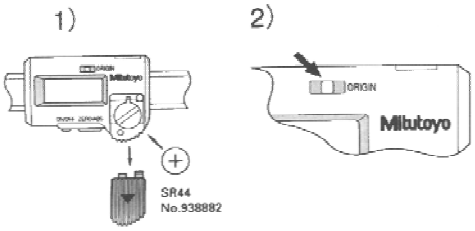



### Battery Installation and Origin Setting

Set the origin of the scale after installing the battery. Otherwise, the error sign("E" at the least significant digit) may appear, resulting in incorrect measurements.

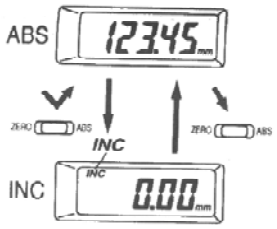
**1)** To install the battery, remove the compartment lid and install the SR44 battery with its positive side facing up. After the battery is installed, set the origin.

**2)** To set the origin, move the slider to an area you wish to set as your origin. Turn the power on. Hold the ORIGIN switch down for more than one second. The "0.00" display appears, indication Origin setting is complete. The origin will be retained even if the power is turned off.




### Incremental (INC) & Absolute (ABS) mode

The LCD will dispay measurements from the origin when turned on (ABS mode). To set the origin see above. The display can be set to zero at any desired position by pressing the ZERO/ABS switch. INC indicator will apper in the display (INC mode), permitting measurements from this zero point. To return to the ABS mode hold the ZERO/ABS button form more than 2 seconds.

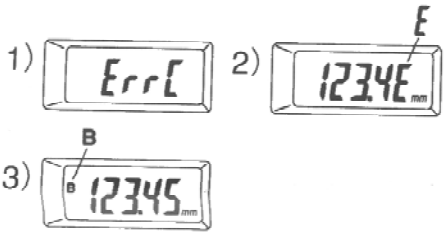



### Error Symptoms & Remedies

◆◆ **ERRC and display flickering:** Occurs when the scale surface is stained. Clean the scale surface and coat a thin film of low viscosity oil to keep out moisture.

◆◆ **E in the least significant digit:** This occurs when the slider is moved too quickly, but it does not affect the measurement. If it stays on when the slider stops, the scale surface is probably stained. If this is the case, take remedies as for ERRC.

◆◆ **B indication:** Battery voltage is low. Replace the battery as soon as possible.




### Cleaning

Clean gage with CRC 3-36 Cleaning and Lubrication OIl. Wipe off excess after cleaning. If CRC 3-36 is not available, use Denatured Alcohol to clean, then apply light oil and wipe off excess.

# ADJUSTMENTS

## PROXIMITY SWITCH

For the proximity switch to perform properly and reverse the direction of the grinding head assembly, the sensor end of the proximity switch must face toward the head assembly that is in use and must be mounted such that it is located past the edge of the prox holder.

NOTE: The light on the proximity switch activates when metal is approximately 3/16" [4.6 mm] from the front of the proximity switch.

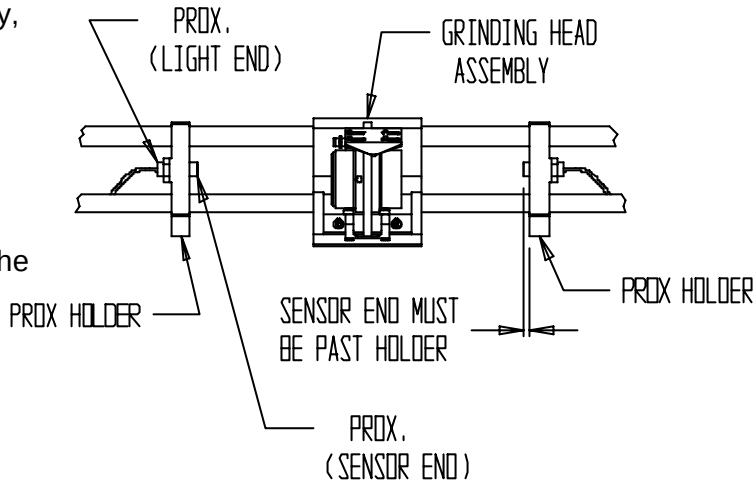



**FIG. 15**

## VERTICAL INFEED SHAFT DRAG

If the grinding shaft tends to walk during grinding, the drag on the vertical adjusters needs to be increased. To increase the drag in the vertical adjustment shafts, tighten the setscrew on the back of the vertical adjustment housing.

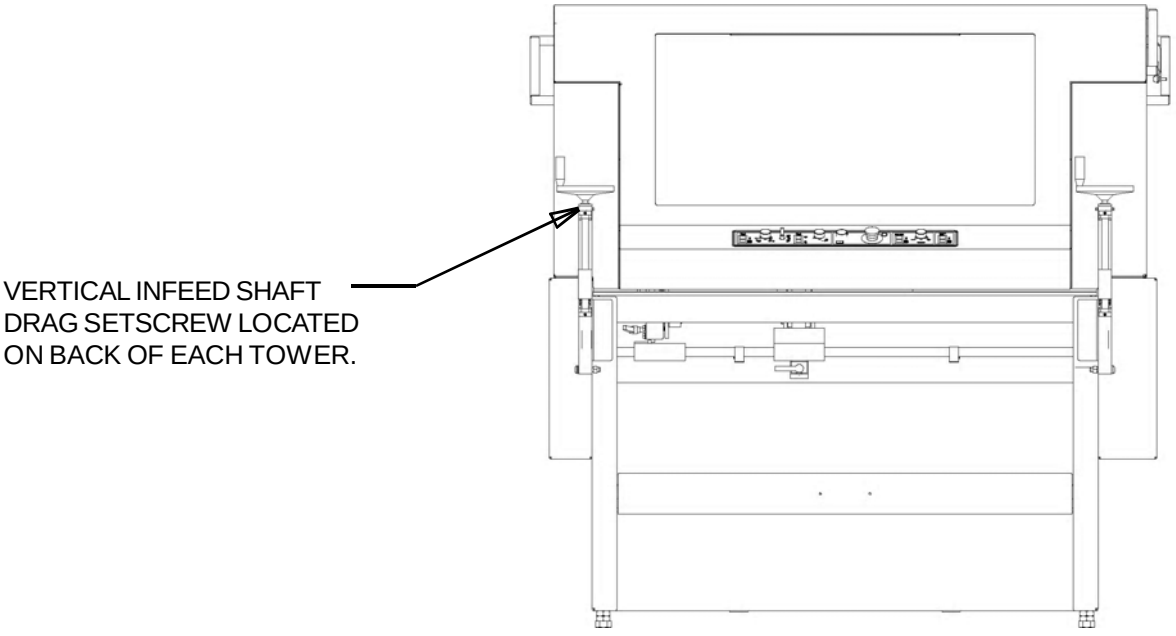



**FIG. 16**

## TRAVERSE BELT TENSION

To adjust the tension on the traverse belt, tighten the screws and nuts located to the left side of the traverse belt behind the left side cover panel to a minimum of 1.75" [44 mm]. The traverse belt should be level when adjusting the belt tension.

**DO NOT OVERTIGHTEN. OVERTIGHTENING COULD DAMAGE THE BELT OR TRAVERSE DRIVE SYSTEM.**

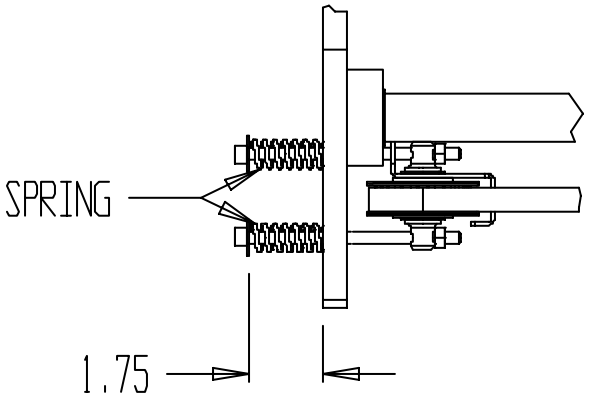



**FIG. 17**

## TRAVERSE CLAMP FORCE

If the traverse clamp is slipping during regular operation it may become necessary to adjust the clamp tip location. To adjust the clamp tip, loosen the jam nut and rotate the clamp tip. The clamp tip should be adjusted to the dimension specified in FIG 18. To measure, move the traverse belt out of the way. Measure the clamped distance from the clamp tip to the clamping block (shoe). To secure the new position, jam the nut against the clamp being careful not to move the clamp tip.

If there is not enough adjustment in the clamp tip, the bracket that supports the clamp can also be adjusted. The bracket is slotted, to adjust loosen the two screws that are hold the bracket in place and slide the bracket forward or back. Then retighten the screws, make sure they are tight or the bracket will move during clamping. Check the tip distance and make any necessary adjustments.

**THE TIP HAS BEEN FACTORY SET SO THAT IT WILL SLIP IF THE GRINDING HEAD ASSEMBLY COMES IN CONTACT WITH SOMETHING. CAUTION SHOULD BE USED AS ADJUSTING THE TIP WILL AFFECT THE SLIP LOAD AND COULD DAMAGE THE CLAMP TIP, BELT OR TRAVERSE DRIVE SYSTEM.**

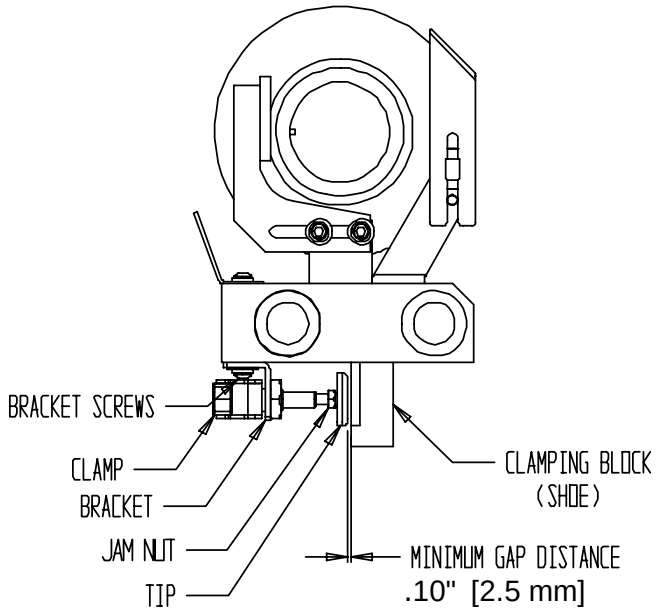



**FIG. 18**

## SPIN GRINDING HEAD WEAR PADS

The bronze wear pads used to move the spin wheel will wear and may need to be adjusted or replaced.

When pad wears to within a 1/16" [1.5 mm] of the screws, the pad will need to be flipped or replaced. The holes in the pads are offset slightly, this allows the pads to be flipped if neccessary to accomplish the best fit. When installing new pads, flip or rotate the pads until Gap 2 is as small as possible without the pads pinching the wheel.

On the spin grinding head assembly, the distance from the pad to the wheel can be adjusted in and out by loosening the screws located on the sides of the yokes. Gap 1 should be adjusted to about 1/16" [1.5 mm]. See FIG. 19

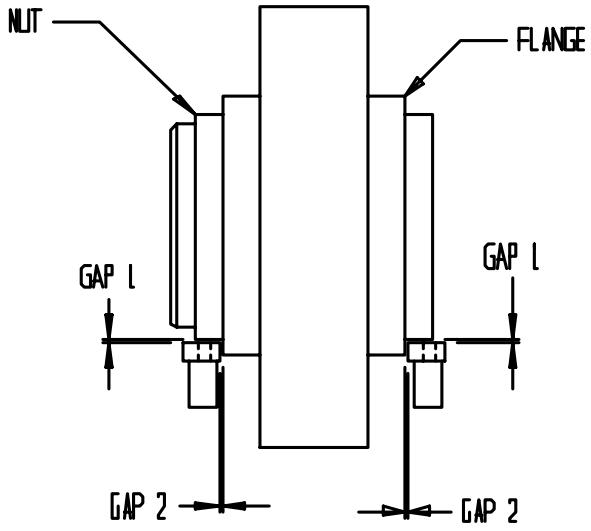



**FIG. 19**

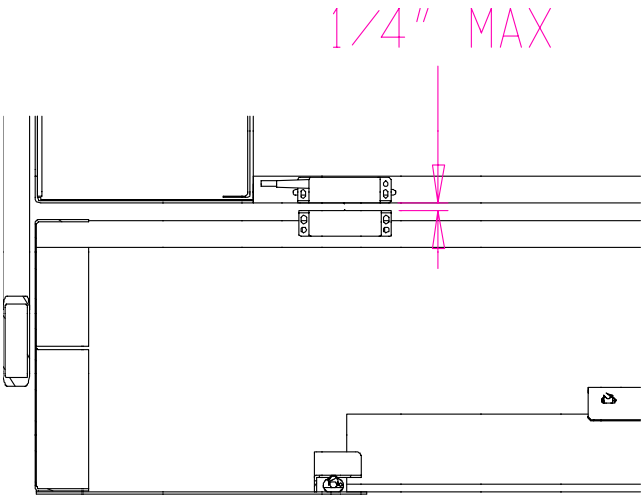
## SAFETY SWITCH ALIGNMENT/REPLACEMENT

The safety switch located on the front and rear guard door must line up properly or the grinder will not function.

The front door switches must be within 1/4" [6 mm] and the targets on the switches must line up in order for the switch to function properly. See FIG. 20 and 21.

The switches and the key are attached to the guarding using a "Torx" style tamper resistant screws. A tool for this type of screw is required to make this adjustment.

The rear door switch may need to be adjusted so that the key slides smoothly into the door safety switch. If the switch and key do not align, loosen the screws on the switch or key housing and adjust until they are aligned. Then tighten all screws and check the function of the rear door and door switch.




FRONT DOOR SWITCH
(INSIDE UPPER RIGHT SIDE)

**FIG. 20**

If the door has too much side to side play, this may cause alignment issues with the door switch. To adjust, loosen the screws that hold door slides. Then push the slides toward the center of the machine to remove any side to side play in the door. Retighten the screws and test then door until the key consistently engages the switch.

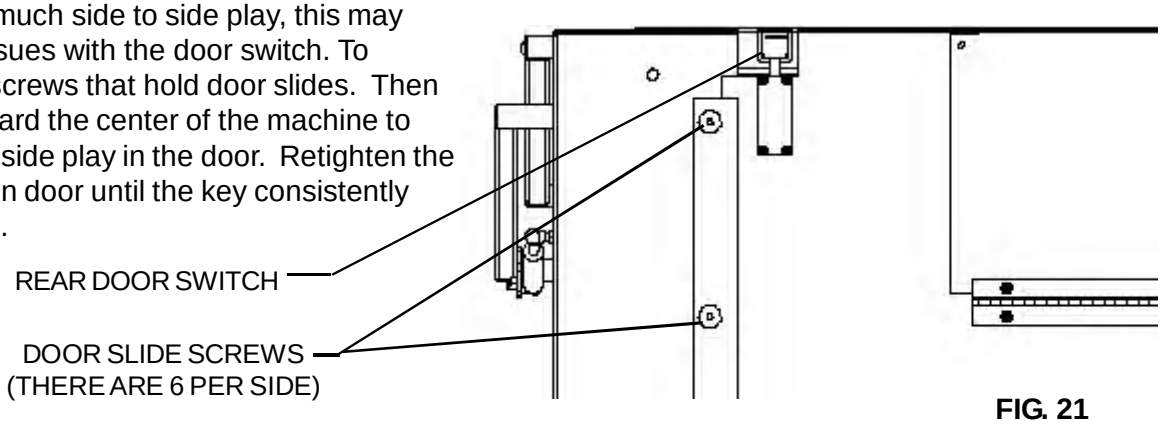



**FIG. 21**

# ADJUSTMENTS (Continued)

## RELIEF GRINDING HEAD BEARING ADJUSTMENTS

It may be necessary to adjust the guide bearings on the relief head. To adjust the position of the support bearings, POSITION THE GRINDING HEAD AT THE FAR LEFT POSITION, loosen the two positioning bolts located on the side of the support assembly. Press on the support assembly until the top support bearing is touching the grinding wheel hub. Hold the support in place with the bearing touching the hub and tighten the two positioning bolts. Check to see that the bearing is touching or has minimal clearance to the hub through the full range of left to right travel.

**NOTE: EXCESSIVE PRELOAD OF THE BEARING ASSEMBLIES ON THE HUB CAN CAUSE THE BEARINGS TO WEAR QUICKER AND COULD CAUSE THEM TO FAIL PREMATURELY.**

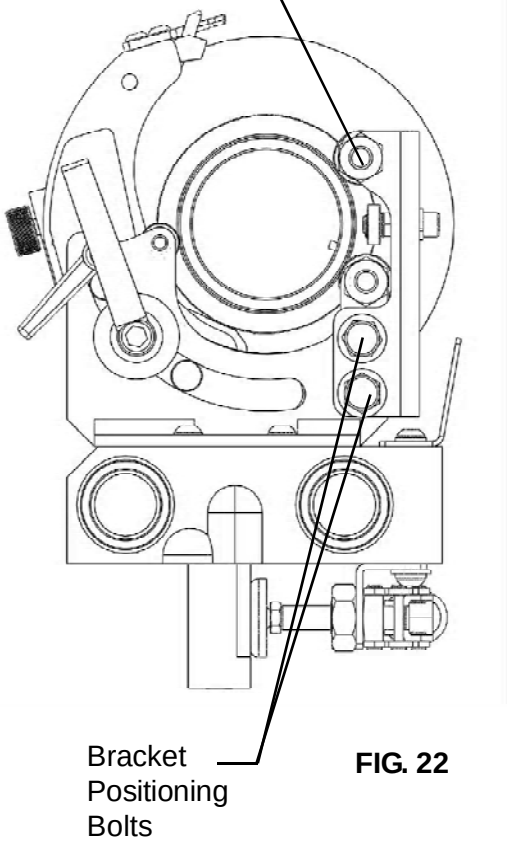



**FIG. 22**

# CONTROL BOARD POTENTIOMETER ADJUSTMENTS

## POTENTIOMETER ADJUSTMENTS TRAVERSE DRIVE CONTROL (TDC)

Min. Speed--Factory set at full (CCW) 8:30. Do not change this setting.

(Right Traverse) Forward Torque--Factory set at full (CW) 4:30. Do not change this setting.

(Left Traverse) Reverse Torque--Factory set at full (CW) 4:30. Do not change this setting.

IR COMP--Factory set to 9:00. IR COMP is current (I) resistance (R) compensation (COMP). IR COMP adjusts the output voltage of the drive which balances load to motor RPM. Regulation of a traverse motor may be improved by slight adjustment of the IR COMP pot clockwise from its factory-set position. Overcompensation causes the motor to oscillate or to increase speed when fully loaded. If you reach such a point, turn the IR COMP pot counterclockwise until the symptoms disappear.

Max. Speed--Set at 3:30 for maximum voltage of 90 Volts DC to the traverse motor. When voltage is above 90 volts DC, the traverse motor will start to pulsate and not run smoothly.

(Right Traverse) Forward Acceleration--Factory set at full (CCW) 8:30. Do not change this setting.

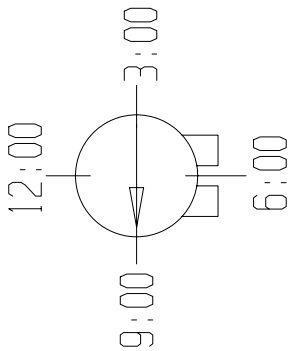
(Left Traverse) Reverse Acceleration--Factory set at full (CCW) 8:30. Do not change this setting.

(DB) Dead Band is the potentiometer setting for the 50 or 60 Hz cycle control. Factory set to 9:00, works for both 50 and 60 Hz. Do not change this setting.

Calibrating the **DWELL TIME** rotary DIP switch adjusts the amount of time the process remains in the stop position after a limit switch is actuated. The **DWELL TIME** range is adjustable from 0-4 seconds. A DIP switch setting of 0 sets the **DWELL TIME** to 0 seconds, while a setting of 9 sets the **DWELL TIME** to 4.5 seconds. Dwell time is preset to #4 setting for a 2 second dwell time when reversing at each end of stroke. A setting of 6, sets the dwell time at 3 seconds, etc.

**Diagnostic LED's indicate the function that is currently being performed:**

**POWER indicates that AC power is being applied to the control.**
**FORWARD indicates that the process is running in the forward direction (traversing left).**
**REVERSE indicates that the process is running in the reverse direction (traversing right).**
**PROX 1 FWD LIMIT lights when the forward limit switch is actuated (left prox.).**
**PROX 2 REV LIMIT lights when the reverse limit switch is actuated (right prox.).**
**DWELL lights when the process remains stopped after a proximity switch is actuated.**




**Potentiometer Clock Orientation**

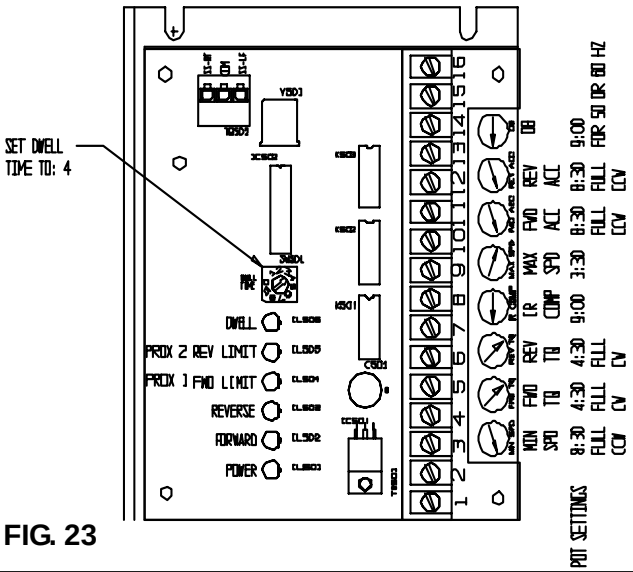



**FIG. 23**

# CONTROL BOARD POTENTIOMETER ADJUSTMENTS (Continued)

## SPIN DRIVE CONTROL BOARD (SDC)

The Spin Drive Control Board has four potentiometers, two switches and one dial as shown on FIG. 24. These potentiometers,swtiches and dial have been set at the factory to the positions shown on FIG. 24.

**In the Relief Grinding Mode--**

The Torque Shut Off mode selector allows you to turn on or off the Torque Shut Off feature. When switch 1 is set to ON, the board will decrease the spin motor torque once the shut time is achieved after leaving the right proximity sensor. The amount of time it takes before the torque is decreased is set with the Torque Shut Off Delay dial. The spin motor toque will be increased to the higher value once the right proximity switch is activated again. If the Torque Shut Off selector is in the OFF position the torque will remain constant during relief grinding. This should be set to OFF.

Torque Shut Off Delay dail is used to set the duration of time before the torque is decreased after leaving the right proximity sensor during relief grinding. If the dial is turned clockwise (higher number) the higher torque value will stay on for a longer period of time.

The Relief Speed (RSP) and the Relief Torque Pot (RTP) interact with each other. The (RSP) is located on the spin board as a remote speed preset at 12:00 (20 Volts DC). See FIG. 24. The (RTP) is located on the control panel and is for relief torque adjustment.

Relief Speed Pot (SPEED) when rotated clockwise will increase spin drive speed (the speed at which the reel indexes to the next blade). This speed should never be above the 3:00 setting.

Relief Torque Pot (TORQ) is used to vary the reel to finger holding torque for relief grinding. The recommended starting point is 30 in/lbs of torque setting. Never adjust the (RTP) potentiometer dial past the red line marking. Setting the reel to finger torque to high could cause the spin motor system to not operate smoothly.

Relief Idle Torque Pot (ITP) is used to vary the reel to finger holding torque once the shut time is achieved after leaving the right proximity sensor if the Torque Shut Off Selector is set to on.

**In the Spin Grinding Mode--**

The Spin Torque Potentiometer (STP) and the Spin Speed Pot (SSP) interact with each other. The (STP) is located on the spin board as remote torque preset at 2:00 for torque setting. See FIG. 24. The (SSP) is located on the control panel and is for spin speed adjustment.

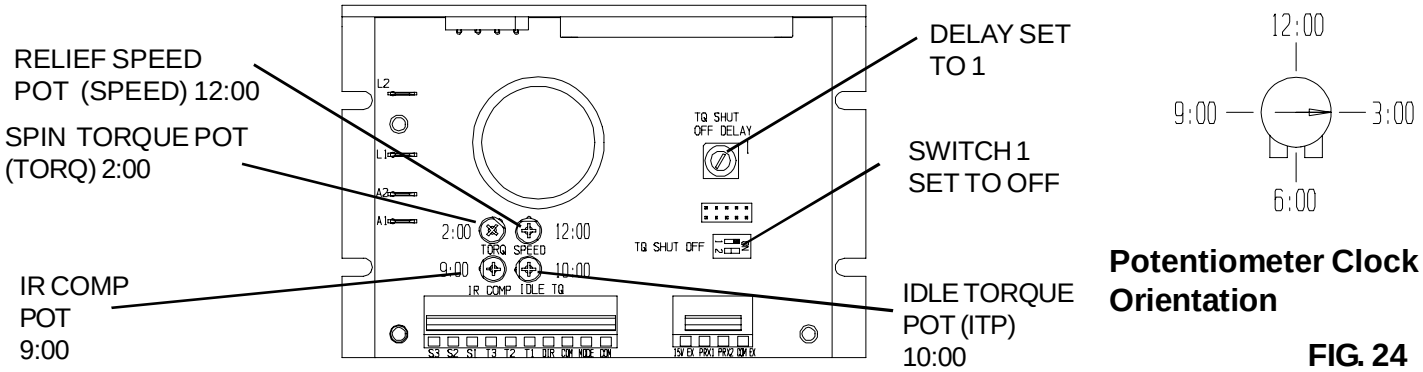
Spin Torque Pot (STP) controls maximum torque allowable in the spin grinding cycle only. This should never be adjusted past the 3:00 position. If the reel does not turn check that the reel is free turning by hand spinning with the power off and the spin drive disconnected.

The Spin speed Pot (SSP) controls reel spin speed, adjust as required. This controls the spin drive speed for spinning the reel.

**IR COMP Pot--**

The IR Compensation is factory set at 9:00.

Regulation of the spin or relief grind spin motor may be improved by a slight adjustment of the IR COMP pot clockwise from its factory-set position. Overcompensation causes the motor to oscillate or to increase speed when fully loaded. If you reach such a point, turn the IR COMP pot counterclockwise until symptoms just disappear.




**Potentiometer Clock Orientation**

**FIG. 24**

# ELECTRICAL TROUBLESHOOTING

## SKILL AND TRAINING REQUIRED FOR ELECTRICAL SERVICING

This Electrical Troubleshooting section is designed for technicians who have the necessary electrical knowledge and skills to reliably test and repair the RG5500 electrical system. For those without that background, service can be arranged through your local dealer.

This section presumes that you are already familiar with the normal operation of the Grinder. If not, you should read the Operator's Manual, or do the servicing in conjunction with someone who is familiar with its operation.

Persons without the necessary knowledge and skills should not remove the control panel cover or attempt any internal troubleshooting, adjustments, or parts replacement.

If you have any question not answered in this manual, please call your local dealer.

## WIRE LABELS

All wires on the RG5500 have a wire label at each end for troubleshooting. The wire label has a code which tells you wiring information. The wire label has a seven position code. The first two or three digits are the wire number: 01-199. The next three numbers or letters are the code for the component to which the wire attaches. Example: TDC for Traverse Drive Control. The last two numbers or letters are the number of the terminal on the component to which the wire attaches.

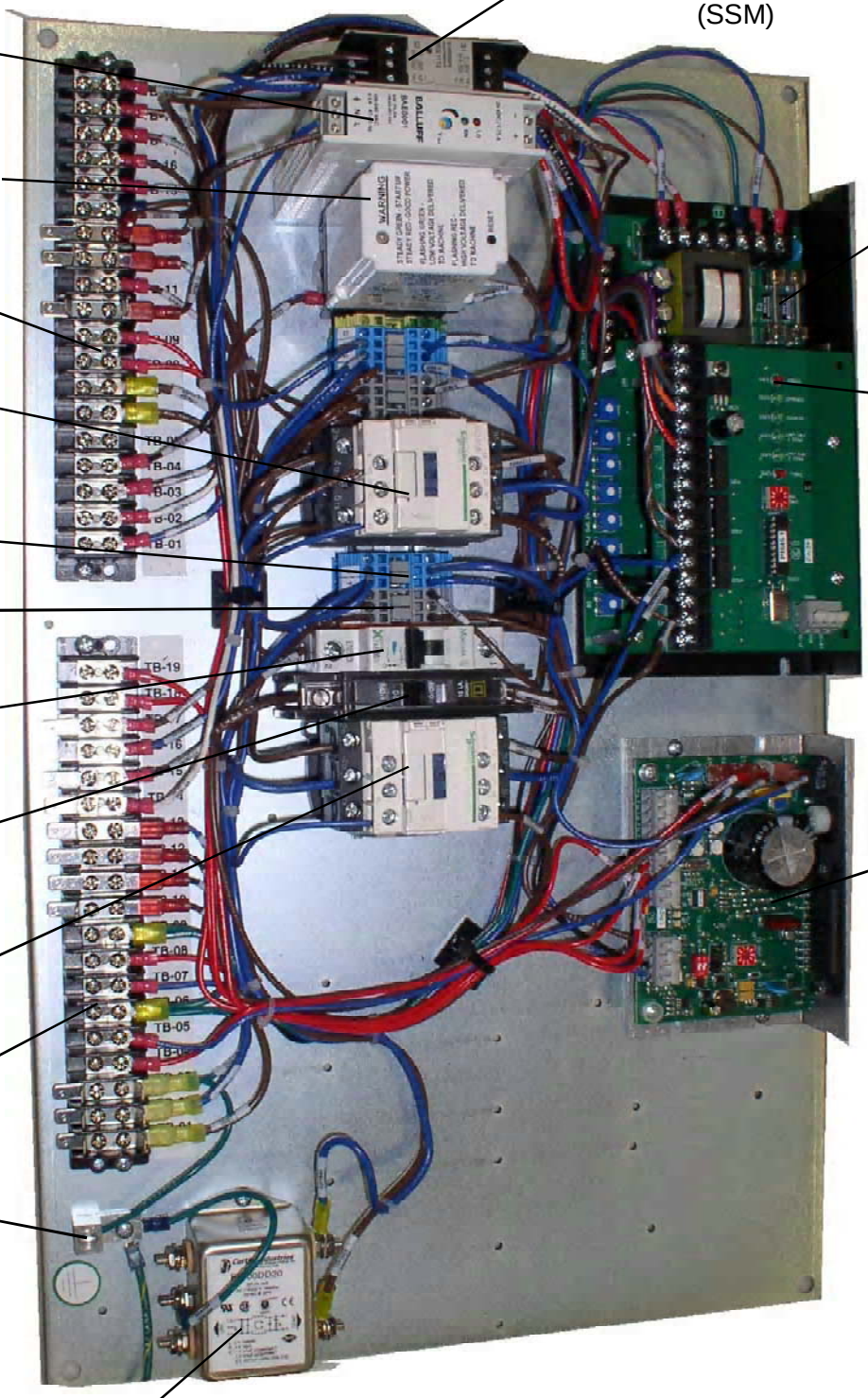
TERMINAL BLOCKS:

To insert or remove a wire from the terminal block insert a small screw driver into the square hole. Then insert or remove wire from the round hole. Remove screwdriver to lock the wire in place.

Note the square hole can also be used when checking for voltages. The probe tip of the multimeter can be inserted into the square hole to take readings.

## TROUBLESHOOTING INDEX

## CONTROL PANEL
## located on the right side of the machine.



# ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM--AC Main Power Controls: no electrical power to control panel.**

**Verify all wires shown on the wiring diagram are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or no loose crimps between the wire and the terminal. If problem persists, test as listed below.**

| Possible Cause | Checkout Procedure | |
|---|---|---|
| Emergency Stop Botton(ESS) is Depressed | **A.** Pull Up on ESS Button | Machine works<br>Yes--end troubleshooting<br>No--go to Step **B.** next |
| You must push the System Start Switch (SSS) to get power to control Panel | **B.** Listen for the Magnetic Starter (MAG) contacts to pull in with a clunk | Machine works<br>Yes--end troubleshooting<br>No--go to step **C.** next. |
| Main Power Cord is not plugged in | **C.** Plug in main power cord | Machine works<br>Yes--end troubleshooting<br>No--go to step **D.** next. |
| Guard doors must be closed and ALL Switches **MUST** be turned **OFF** for contactor to pull in. | **D.** Close guard doors and turn off all switches. | Machine works<br>Yes--end troubleshooting<br>No--go to step **E.** next. |
| Main 20 amp outlet circuit breaker has tripped | **E.** Check circuit breaker in your building and reset if necessary. (Check wall outlet with a light to make sure it works) | Machine works<br>Yes--end troubleshooting<br>No--but light works in outlet--go to Step **F.** next.<br>No--and light does not work in outlet. You must solve your power delivery problem independent of machine. |
| No 120 Volts AC power to Filter (FTR) | **F.** Check for 120V at Cord into FTR (Power Cord #32)<br>[Blue wire to Brown wire] | FTR "Line" Terminals for 120 Volts AC<br>Yes--Go to Step **G**. next.<br>No--Replace Cord - (5NT6059054) |
| No 120 Volts AC power out of Filter | **G.** Check for 120V out of FTR<br>[Blue wire to Brown wire] | FTR "Load" Terminals for 120 Volts AC<br>Yes--Go to Step **H**. next.<br>No--Replace Filter |
| No 120 Volts AC power to Main Circuit Breaker (MCB) | **H.** Check for 120V to MCB | Measure 120 VAC from MCB Terminal (01MCB--) to Terminal Block 4 (02TBW-4) blue (use square hole)<br>Yes--Go to Step **I**. next.<br>No--Check wires & replace if needed. |
| No 120 Volts AC power from Main Circuit Breaker (MCB) | **I.** Check for 120V to MCB | Measure 120 VAC from MCB Terminal (03MCB--) to Terminal Block 4 blue (02TBW-4)<br>Yes--Go to Step **J**. next.<br>No--Flip Switch on MCB to "ON" - Machine works-- end trouble shooting<br>Machine does not work-- check MCB |

# ELECTRICAL TROUBLESHOOTING (Continued)

| ***Possible Causes*** | ***Checkout Procedure*** | |
|---|---|---|
| No 120 Volts AC power to Secondary Circuit Breaker (SCB) 6 Amp. | **J.** Check for 120V to SCB | Measure 120 VAC from SCB (03SCB--) to nuetral (blue) terminal out of FTR (02FTRBU)<br>Yes--Go to Step **K.** next.<br>No--Check wires & replace if needed. |
| No 120 Volts AC power from Secondary Circuit Breaker (SCB) 6 Amp. | **K.** Check for 120V from SCB | Measure 120 VAC fromSCB (67SCB--) to nuetral (blue) terminal out of FTR (02FTRBU)<br>Yes-- Go to Step **L.** next.<br>No--Flip Switch on SCB to "ON"-Machine works--end of troubleshooting. Machine does not work--check SCB |
| 120 Volts AC power not delivered to Terminal Strip | **L.** Check for 120 Volts AC at terminal strip. | Measure 120 VAC from Terminal "11" on Terminal Strip 2 "07TB2-11" to nuetral (blue) terminal out of FTR (02FTRBU)<br>Yes--Go to Step **M**. next.<br>No--Check continuity of wires #07 and #03, verify terminal block Jumper are installed on Grey Blocks 1-3. |
| Grinding Motor Switch (GMS) not working | **M.** Check for 120 Volts AC at GMS Terminals 1 (switch must be in the off position) | Measure 120 VAC from GMS Terminal 1 to nuetral (blue) terminal out of FTR (02FTRBU)<br>Yes--Go to Step **N**. next.<br>No--Flip Switch and check again-Works--Switch is upside down. Still no 120VAC-- Check wiring/Verify Continuity/ Replace Switch |
| Spin Motor Switch (SMS) not working | **N.** Check for 120 Volts AC at SMS Terminals 1 (switch must be in the off position) | Measure 120 volts AC from SMS Terminal 1 to nuetral (blue) terminal out of FTR (02FTRBU)<br>Yes--Go to Step **O**. next.<br>No--Flip Switch and check again-Works--Switch is upside down. Still no 120VAC -- Check Wiring/ Verify Continuity/ Replace Switch |
| Bad Emergency Stop Switch (ESS) | **O.** Check voltage after the (ESS)<br>MAKE SURE SWITCH IS PULLED UP! | Measure 120 Volts AC from (ESS) terminal 2 to nuetral (blue) terminal out of FTR (02FTRBU)<br>Yes--Go to Step **P.** next<br>No--Check wire for continuity, then verify switch continuity. If bad replace ESS contactor (NC) |
| Bad System Start Switch (SSS) | **P.** Hold in SSS and Check voltage after the (SSS) | Measure 120 Volts AC from (SSS) term 3 to nuetral (blue) terminal out of FTR (02FTRBU)<br>Yes--Go to Step **Q.** next<br>No--Check wire for continuity, then verify switch continuity. If bad replace SSS contactor (NO) |
| Low Voltage Relay (REL) not operating | **Q.** Hold in SSS and Check voltage at LVR. LVR must be installed in 8-pin socket. | Measure 120 Volts AC from LVR term 8 to nuetral (blue) terminal out of FTR (02FTRBU)<br>Yes--Go to Step **R.** next<br>No--Check for 120 Volts AC from LVR term 6 to term 7.<br>Yes--Verify Continuity from term 1 to term 8 on LVR. Replace LVR if bad. No--Verify Continuity of LVR Wires. |
| Bad Main Contactor (MAG) | **R.** Hold in SSS and Check voltage at MAG A1 & A2. | Measure 120 Volts AC from MAG Term A1 to Term A2<br>Yes--MAG Should pull in with clunck, if not replace MAG.<br>No--Verify Continuity of Wires to MAG A1 and A2 |

# ELECTRICAL TROUBLESHOOTING (Continued)

***PROBLEM*--Machine Shuts off when you turn on Grind motor switch or Spin Motor Switch.**

| ***Possible Cause*** | ***Checkout Procedure*** | |
|---|---|---|
| Guard Doors are Open | **A.** Close the front doors and rear door | Machine works<br>Yes--end troubleshooting<br>No--go to Step **B.** next |
| Door Safety Switches are not working properly | **B.** Check Alignment of Door Safety Switches on front doors and rear door | See Alignment section of this Manual.<br>Machine works<br>Yes--end troubleshooting<br>No--go to Step **C.** next |
| No 24 Volts DC to Safety Monitor (SSM) | **C.** Check SSM for 24 Volts DC. (Turn switches off and press start switch to pull in MAG before testing voltages) | Measure 24 volts DC from SSM Terminal A1+ to Terminal A2-<br>Yes--Go to Step **E**. next.<br>No--Go to Step **D**. next. |
| No Power into 24 Volt DC Power Supply (PWR) | **D.** Check PWR for 120 Volts AC. (Turn switches off and press start switch to pull in MAG before testing voltages) | Measure 120 volts AC from PWR Terminal L to Terminal N<br>Yes--Verify 24 VDC out of PWR (V+ to V-). Replace if no Voltage out; or Check Wiring & Verify Continuity to SSM if there is 24 VDC.<br>No--Verify Wiring and Continuity from PWR to terminal blocks (16TBW-12 and 24TBG-8) |
| No Power Out to Door Switches | **E.** Verify 24Volts DC out to Door Switches. | Measure approximately 24 volts DC from Terminal Strip 1 Terminal 17 (56TB1-17) to Terminal Strip 2 Terminal 3 (29TB2-3)<br>Yes--Go to Step **F**. next.<br>No--Verify Continuity of Wires to Terminal strip, Replace SSM if wires check OK. |
| Rear Door Switch or Rear Ramp Switch is Bad | **F.** With Rear Door closed or Rear Ramp Closed Verify 24Volts DC back form rear Door Switch. | Measure approximately 24 volts DC from Terminal Strip 2 Terminal 3 (29TB2-3) to Terminal Strip 1 Terminals 14 and 15.<br>Yes--Go to Step **G**. next.<br>No--Check Alingment of Rear door switch. If no Voltage to Term14 or 15 then replace rear switch. If still not working replace cord. |
| Front Door Switch is Bad | **G.** With Front doors Closed Verify 24Volts DC back form Front Door Switch. | Measure approximately 24 volts DC from Terminal Strip 1 Terminal 17 (56TB1-17) to Terminal Strip 2 Terminals 2 and 4.<br>Yes--Replace SSM<br>No--Check Alingment of Front door switch. If no Voltage to Term2 or 4 after alignment then replace front switch. |

***PROBLEM*--(MAG) turns on only with System Start Switch held in.**

| ***Possible Cause*** | ***Checkout Procedure*** | |
|---|---|---|
| (MAG) holding contact has failed | **A.** Check wiring to and from MAG holding contact in. Verify the magnetic starter holding contact is working. | Measure 120 Volts AC at MAG term L3 to Term Block 4(Blue) after SSS is pushed.<br>Yes--Verify Wiring to LVR<br>No--Measure 120 Volts AC at MAG term T3 to Term Block 4(Blue) after SSS is pushed. If 120 Volts AC Replace MAG. If no 120 Volts AC verify wiring to T3. |

# ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM-- Grinding motor not working.**

**Assuming (SSS) System Start Switch is on with 120 volts AC to control panel and all other functions are working.**

**Verify all wires shown on the wiring diagram are correct and pull on wire terminals with approximately 3lbs force to verify there are no loose terminal connections and/or no loose crimps between the wire and the terminal. If problem persists, test as listed below.**

| Possible Cause | Checkout Procedure | |
|---|---|---|
| Grinding Motor Switch (GMS) is not on | **A.** Turn switch on | Grinding Motor works<br>Yes--end troubleshooting<br>No--go to Step **B.** next |
| Guard doors are not closed | **B.** Close front and rear guard doors | Grinding Motor works<br>Yes--end troubleshooting<br>No--go to Step **C.** next |
| 15 Amp Circuit Breaker (CB) is tripped | **C.** Check 15 amp CB on the side of the grinder above the control cover. Press in if tripped. | Grinding Motor works<br>Yes--end troubleshooting<br>No--go to Step **D.** next |
| GMS not working | **D.** Check for power to GMS | Measure 120 volts AC from Terminal strip 2 terminal #15 to nuetral (blue) terminal out of FTR (02FTRBU)<br>Yes--go to Step **E.** next<br>No-- check continuity of wires to GMS. |
| | **E.** Check for power from GMS | Measure 120 volts AC from Terminal strip 2 terminal #14 to nuetral (blue) terminal out of FTR (02FTRBU)<br>Yes--Go to Step **F.** next<br>No--replace GMS |
| Grinding Motor Relay not working | **F.** Check for power to relay Coil (Relay should click when GMS is turned on.) | Check for 120 Volts (AC) from A1 to A2 of Grinding motor Relay (REL)<br>Yes--Go to Step **G.** next<br>No-- check wires to Grinding motor Relay A1 & A2. |
| No Power to Relay Contacts | **G.** Verify Power to Relay Contacts | (REL) Terminals L1 to L2 for 120 Volts (AC)<br>Yes--Go to Step **H.** next<br>No--Check wires to REL Term L1 & L2 |
| Bad Contacts in Grinding motor Relay | **H.** Verify power out of Grinding Motor Relay. | (REL) Terminals T1 to T2 for 120 Volts (AC)<br>Yes--Go to Step **I.** next<br>No--Replace Gringing Motor Relay |
| Bad Circuit Breaker/ Bad Grinding Motor | **I.** Verify Power to Grinding motor Cord. | Verify wiring at terminals 1, 2 & 3 on Terminal Strip 1.<br>Check 42TB1-1 to 64TB1-2 for 120 Volts (AC).<br>Yes-- Check motor cord terminals. Replace motor.<br>No-- Check continuity of circuit breaker. Replace. |

# ELECTRICAL TROUBLESHOOTING (Continued)

***PROBLEM--SPIN DRIVE NOT WORKING IN SPIN MODE.***

**Assuming (SSS) System Start Switch is on with 120 volts AC to control panel and all other functions are working.**

**Verify all wires shown on the wiring diagram are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or no loose crimps between the wire and the terminal. If problem persists, test as listed below.**

| *Possible Cause* | *Checkout Procedure* | |
|---|---|---|
| Spin Speed Pot (SSP) set to zero | **A.** Set (SSP) to 200 on the control panel. | Spin Motor works<br>Yes--end troubleshooting<br>No--go to Step **B** next |
| Spin Motor Switch (SMS) is not on | **B.** Turn (SMS) switch on | Spin Motor works<br>Yes--end troubleshooting<br>No--go to Step **C.** next |
| Circuit Breaker is Tripped (4 AMP) | **C.** Reset Circiut Breaker on right side of machine by above the Control Panel. Push in if tripped. | Spin Motor works<br>Yes--end troubleshooting<br>No--go to Step **D.** next |
| Spin Drive Control (SDC) is not working | **D.** Check (SDS) L1 to L2 for 120 Volts AC | (SDC) Remove wires to Terminals L1and L2 and test betwen wires for 120V AC.<br>Yes--reconnect wires to board then go to Step **E.** next<br>No--Verify Power to Circuit Breaker and SMS and continuity of wires. Replace CB or SMS if needed. |
| | **E.** With the Selector switch in spin and the spin pot set to 400RPM Check (SDC) A1 and A2 for 90-120 Volts DC | (SDC) Remove wires, test Terminals A1 to A2 on the board for approx 90-120 V DC<br>Yes--reconnect wires and go to Step **F.** next<br>No--go to Step **G.** |
| Spin Drive motor is bad | **F.** Check spin motor continuity<br>  **DISCONNECT POWER FROM MACHINE !** | Remove wires at Terminal Strip 1, Term 4 & 5 check 0 ohms across the black and white wires from the motor. Reading 0 Ohms<br>Yes--end troubleshooting, spin drive should run, if not, replace motor.<br>No--go to Step **J.** |
| Spin drive control in Torque mode | **G.** Check continuity of mode selector switch. | Light on SDC next to SP should be ON. If not, remove wires 41SDCMOD and 44SDCCOM from SDC control board. Check continuity of wires, should read 0 ohms. Light next to SP is on?<br>No--Check continuity of STS switch, replace if bad. (Machine was in Torque mode)<br>Yes-- Light next to SP is on but machine does not work. Reinstall wires, Go to Step **H**. next |

# ELECTRICAL TROUBLESHOOTING (Continued)

| Possible Cause | Checkout Procedure | |
|---|---|---|
| Spin Torque Pot (TORQ) is not set correctly | **H.** Check remote torque pot (TORQ) on the (SDC) board. | (TORQ) on (SDC) board, should be set as labled on page 25. Adjust if incorrect and check Spin Drive Function. All Potentiometers are set correctly<br>Yes--Go to Step **I**. next<br>No--Retest after adjustments. |
| (SSP) is not working | **I.** (SSP) (10K) Remove 3 Remote Speed wires.<br>Red wire to term 2<br>White wire to term 1<br>Black wire to term 3<br>  **DISCONNECT POWER FROM MACHINE !** | Check for 10,000 ohm<br>Red wire to white wire<br>Full CCW--0 ohms<br>Full CW-10,000 ohms<br>Red wire to black wire<br>Full CCW--10,000 ohms<br>Full CW--0 ohms<br>Yes--replace (SDC)<br>No--replace (SSP) |
| Worn Motor Brushes | **J.** Inspect Motor Brushes | Remove the brushes one at a time and maintain orientation for reinsertion. See if brush is worn short 3/8" (10 mm) minimum length.<br>Yes--replace motor brushes<br>No--replace Spin Drive Motor |

# ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM--Spin Drive not working in relief mode.**

**Assuming (SSS) System Start Switch is on with 120 volts AC to control panel and all other functions are working.**

**Verify all wires shown on the wiring diagram are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or no loose crimps between the wire and the terminal. If problem persists, test as listed below.**

| Possible Cause | Checkout Procedure | |
|---|---|---|
| Relief Torque Pot (RTP) set to zero. | **A.** Set (RTP) to 20 on the control panel. | Spin Motor works.<br>Yes--end troubleshooting<br>No--go to Step **B.** next |
| Spin Motor Switch (SMS) is not on. | **B.** Turn (SMS) switch on. | Spin Motor works.<br>Yes--end troubleshooting<br>No--go to Step **C.** next |
| Circuit Breaker is Tripped (4 AMP) | **C.** Reset Circiut Breaker on the right side of the machine. Push in if tripped. | Spin Motor works.<br>Yes--end troubleshooting<br>No--go to step **D.** next |
| Spin Drive Control (SDC) is not working | **D.** Check (SDC) L1 to L2 for 120 Volts AC | (SDC) Remove wires to Terminals L1and L2 and test betwen wires for 120V AC.<br>Yes--reconnect wires, go to Step **F.**<br>No--Go to Step **E**. next |
| CB or Spin Motor Switch (SMS) is bad | **E.** Check power into (SMS) terminal 6 for 120 Volts AC | Remove Wire to SMS Terminal 6 "89SMS-6" and check between the wire and nuetral (blue) terminal out of (FTR) (02FTRBU) for 120 VAC<br>Yes--Check switch continuity, replace<br>No--Check CB continuity, replace. |
| | **F.** Check (SDC) A1 & A2 for approx. 20 Volts DC (Have Relief Torque set to maximum torque - full clockwise. | Check for approx. 20 VDC from Terminal Strip 1 Terminal 4 (48TB1-4) to Terminal 5 (49TB1-5)<br>Yes--go to Step **G.** next<br>No--Go to Step **I**. |
| Spin Drive motor is bad | **G.** Check spin motor continuity<br>**DISCONNECT POWER FROM THE MACHINE** | Remove motor wires at Terminal Strip 1 (left side lower strip), Term 4 & 5 and check 0 ohms across the black and white motor wires<br>Yes--end troubleshooting motor should work (if it does not, replace motor)<br>No--go to Step **H.** next |
| Worn Motor Brushes | **H.** Inspect Motor Brushes<br>**DISCONNECT POWER FROM MACHINE !** | Remove the brushes one at a time and maintain orientation for reinsertion. See if brush is worn short 3/8" (10 mm) minimum length<br>Yes--replace motor brushes<br>No--replace Spin Drive Motor |

# ELECTRICAL TROUBLESHOOTING (Continued)

| Possible Cause | Checkout Procedure | |
|---|---|---|
| Board is in spin mode. | **I.** Spin Torque Selector not working | Light next to TQ on SDC board should be ON. If not remove wires 41SDCMOD and 44SDCCOM from SDC control board. Machine works.<br>Yes--Machine was in spin mode. Check continuity of STS switch. Replace if bad.<br>No-- Light next to TQ is ON but machine does not work, go to step **J**. |
| Relief Speed Pot (RSP) is not set correctly. | **J.** Check (RSP) remote speed (10k) on (SDC) board | Verify (SPEED) pot setting on the (SDC) board. Should be set as specified on pages 24 and 25. Adjust if incorrect and check Relief Torque function. Works<br>Yes--end of troubleshooting<br>No--go to Step **K**. next |
| (RTP) is not working | **K.** (RTP) (10K) Remove 3 Remote Torque Wires<br>red wire to term 2<br>white wire to term 1.<br>black wire to term 3. | Check for 10,000 ohms<br>Red wire to white wire<br>Full CCW--0 ohms<br>Full CW--10,000 ohms<br>Red wire to black wire<br>Full CCW--10,0000 ohms<br>Full CW--0 ohms<br>Yes--go to Step **L**. nest<br>No--replace (RTP) |
| Switches on SDC incorrect | **L.** Verify postion of all pots and switch on SDC | Verify postion of 4 pots on board. Should be set as specified on pages 24 and 25. Verify that the Troque reduction feature is in the OFF position. (pushed toward the pots on board).<br>Motor works<br>Yes--end of troubleshooting<br>No--replace SDC. |

# ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM : Spin drive speed goes at one speed only.**

| Possible Cause | Remedy | |
|---|---|---|
| Wiring hookup to potentiometer is improper. (If components have been replaced) | **A.** Check potentiometer wiring for proper hookup. See that speed pot is wired per electrical diagram | If wiring is wrong, correct and test.<br>Yes--end of troubleshooting<br>No--Go to Step B. next |
| Defective spin speed control (SSP) potentiometer. | **B.** (SSP) 10K Remove 3 remote speed wires.<br>red wire to term 2<br>white wire to term 1<br>black wire to term 3 | Check for 10,000 ohms<br>Red wire to white wire<br>Full CCW--0 ohms<br>Full CW--10,000 ohms<br>Red wire to black wire<br>Full CCW--10,000 ohms<br>Full CW--0 ohms<br>Yes-- Go to Step C. next<br>No--Replace (SSP) |
| Main circuit board dial pot settings not correct. (If board has been replaced | **C.** Check all pot settings on both boards as of the (SDC) shown on Pages 25. (See Adjustment Section Spin Drive Control [SDC] Board Setting). | Yes-- end of troubleshooting<br>No--replace (SDC) |

**PROBLEM : Spin drive motor speed varies.**

| | | |
|---|---|---|
| IR Comp trim pot not adjusted properly. | **A.** See adjustment section for trim pot setting on Page 25. | Original adjustment was not set properly |
| Torque to rotate the reel too high. | **B.** Readjust bearing preload for the reel. Maximum torque load 25 in./lb to rotate reel. | Too much load on drive motor will cause motor to hunt and vary speed. |
| Check all terminal connections for tightness. | **C.** When .250 female spade terminals are not tight, remove and crimp slightly together. When reinstalling, push on pressure should have increased for good contact. | When connections are not tight the control board varies voltage to the DC motor which then varies speed. |

# ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM--Traverse Drive not working.**

**Assuming (SSS) System Start Switch is on with 120 volts AC to control panel and all other functions are working.**

**Verify all wires shown on the wiring diagram are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or no loose crimps between the wire and the terminal. If problem persists, test as listed below.**

| Possible Cause | Checkout Procedure | |
|---|---|---|
| Traverse Motor Switch (TMS) is not on | **A.** Turn on (TMS) | Traverse works<br>Yes--end troubleshooting<br>No--got to Step **B.** next |
| Traverse Speed Pot (TSP) set to zero | **B.** Set (TSP) to 35 on the control panel | Traverse works<br>Yes--end troubleshooting<br>No--go to Step **C.** next |
| Fuse on Traverse Drive Control (TDC) has failed | **C.** Check fuse and replace if failed. See Page 24. Too heavy a grind causes grinding head traverse motor to overload and blow the fuse.<br>NOTE: The Fuse can not be checked visually. Remove fuse and use Ohm test to check fuse. If the fuse needs replacing you **MUST** use a **3 amp slo-blo fuse.** Part Number 5NT3707546. | Traverse works<br>Yes--end troubleshooting<br>No--go to Step **D.** next |
| Check power to the Traverse Drive Control (TDC) | **D.** Check for 120 Volts (AC) incoming to (TDC) with machine on and TMS set to on. | On (TDC) check Terminal L1 to L2 for 120 Volts AC<br>Yes--Go to Step **F.** next<br>No--Go to Step **E.** next |
| Bad Traverse Motor Switch (TMS) | **E.** Check for 120 Volts AC at (TMS). (Make certain (TMS) is on) | Measure 120 volts AC from TMS Terminal 5 to nuetral (blue) terminal out of FTR (02FTRBU)<br>Yes--Check continuity of wires from Switch to Control. Replace wires.<br>No--Flip Switch and check again-<br>Works--Switch is upside down.<br>Does not work-- Check wiring/Verify Continuity/ Replace Switch |

# ELECTRICAL TROUBLESHOOTING (Continued)

| Possible Cause | Checkout Procedure | |
|---|---|---|
| No DC Voltage from (TDC) Traverse Drive Control | **F.** Check for 90 Volts DC across (TDC) terminals #A1 to #A2 this voltage drives the DC traverse motor. NOTE: Traverse must be on and have (TSP) turned full CW to maximum voltage of 90 VDC | Check (TDC) terminals #A1 to #A2 for 90 Volts DC<br>Yes--go to Step **G.** next<br>No--go to Step **H.** next |
| Traverse Motor is bad | **G.** Check traverse motor continuity<br>  **DISCONNECT POWER FROM MACHINE** | Remove motor wires from Terminal Strip 1 terminals #7 & #8 check for 0 ohms across the black and white wires<br>Yes--end troubleshooting, motor should work (if it does not, replace motor)<br>No--go to Step **J.** next |
| (TSP) is not working | **H.** Check (TSP) (10K) on control panel | (TDC) Pin #8 to #7<br>Pot Full CCW Pot Full CW<br>0VDC 9.75 VDC<br>Pin #8 to 9<br>Pot Full CCW Pot Full CW<br>9.75 VDC 0 VDC<br>Yes--replace the (TDC)<br>No--go to Step **I.** next |
| (TSP) (10K) is bad | **I.** Check (TSP) for 10,000 ohms. Remove three wires from (TDC)<br>red from term #8<br>white from term #7<br>black from term #9 | Check for 10,000 ohms red to white wires<br>Full CCW--0 ohms<br>Full CW--10,000 ohms<br>Red to black wires<br>Full CCW--10,000 ohms<br>Full CW--0 ohms<br>Yes--replace the (TDC)<br>No--replace (TSP) |
| Worn motor brushes | **J.** Inspect Motor Brushes<br>  **DISCONNECT POWER FROM MACHINE** | Remove the brushes one at a time and maintain orientation for reinsertion. See if brush is worn short, 3/8" (10 mm) minimum length.<br>Yes--replace motor brushes<br>No--replace Traverse Motor |

**PROBLEM--Traverse does not stop to reverse directions when flag goes under the proximity switch on the left side or right side of machine.**

| | | | |
|---|---|---|---|
| Gap between flag and prox is incorrect. | **A.** Gap between flag and prox should be 3/16 to 1/4" (4-6 mm). Prox LED does not light when flag is under prox. | If incorrect, adjust per adjustment section of manual.<br>Yes--end troubleshooting<br>No--go to Step B. next | |
| Proximity Switch is bad. | **B.** Proximity switch is not working properly or wire connections are loose. | First check to see if proximity light comes on. When the light is on, it means that there is electricity coming to proximity switch. Actuate prox switches with steel tool to take measurements. | The light coming on shows the proximity is getting electrical contact. |
| | | Left proximity (PROX 1) check Traverse drive Control (TDC) between terminals #13 (black wire) and #15 (brown wire). | Proximity light on-<br>0 Volts DC<br>Proximity light off-<br>12 Volts DC |
| | | Right proximity (PROX) check #14 (black wire) and #15 (brown wire). | Proximity light on-<br>0 Volts DC<br>Proximity light off-<br>12 Volts DC |
| | | | Replace proximity switch if the voltages do not read as above. |

**PROBLEM--Traverse speed control goes at one speed only.**

| Possible Cause | Checkout Procedure | |
|---|---|---|
| Defective speed control potentiometer | **A.** Check potentiometer (Pot) on control panel. | Traverse Drive Control Pin #8 to 7<br>Pot full CCW Pot Full CW<br>0 VDC 9.75 VDC<br>Pin #8 to 9<br>Pot full CCW Pot Full CW<br>9.75 VDC 0 VDC<br>Yes--Pot is OK<br>No--Go to Step **B.** next |
| | **B.** Check potentiometer for 10,000 ohms.<br>Remove three wires from Traverse Drive Control<br>red from term #8<br>white from term #7<br>black from term #9 | Check for 10,000 ohms<br>Red to White wires<br>Full CCW - 0 ohms<br>Full CW - 10,000 ohms<br>Red to Black wires<br>Full CCW - 10,000 ohms<br>Full CW - 0 ohms<br>Yes--Go to Step **C.** next<br>No--replace potentiometer.<br>Wiper inside of potentiometer controls speed. Wiper may be bad and not making contact. |
| Wiring hookup to potentiometer is improper.<br>(If components have been replaced.) | **C.** Check potentiometer wiring for proper hookup. See that speed pot is wired per electrical diagram | Verify potentiomter White wire to terminal 7, Red wire to terminal 8 and Black wire to terminal 9, if not, correct.<br>Check for Proper function.<br>Yes--end troubleshooting<br>No--Go to Step **D.** next |
| Main circuit board dial pot settings not correct. (If board has not been replaced.) | **D.** Check all pot settings on circuit board as shown in wiring diagram. (See adjustment section Traverse Motor Control Board Settings.) | Minimum and maximum pot settings effect traverse speed. |

**PROBLEM--If the carriage traverses to one end of stroke or the other and it stops and does not reverse direction.**

| Possible Cause | Remedy | Reason |
|---|---|---|
| Proximity switch is not working properly or wire connections are loose | First check to see of proximity light comes on. When the light is on, it means that there is electricity coming to proximity switch. Actuate proximity switches with steel tool to take measurements. | The light coming on shows the proximity is getting electrical contact. |
| | Left proximity (PROX1) check Traverse drive Control (TDC) between terminals #14 (black wire) and #15 (brown wire). | Proximity light on- 0 Volts DC Proximity light off- 12 Volts DC |
| | Right proximity (PROX) check (TDC) between terminals #13 (black wire) and #15 (brown wire). | Proximity light on- 0 Volts DC Proximity light off- 12 Volts DC |
| | | Replace proximity switch if the voltages do not read as above. |

**PROBLEM--Insufficient hesitation at carriage stops prior to reversing traverse.**

| | | |
|---|---|---|
| The dwell time on the traverse drive control not set properly. | Reset dwell time as required. One increment increases Dwell time by 1/2 second. | |

**PROBLEM--Traverse changes directions erratically while running in traverse cycle.**

| | | |
|---|---|---|
| Loose wire to proximity switch. | Check wire connections from the proximity switches and tighten down screws. | A loose wire connection will give intermittent electrical contact. |

# MECHANICAL TROUBLESHOOTING

**PROBLEM-- Excessive noise or vibration on one end of the machine.**

| Possible Cause | Checkout Procedure |
|---|---|
| Set screws on bearings are not tight on grinding shaft. | Tighten set screws located on bearings |

**PROBLEM--Grinding wheel traverse binding.**

| Possible Cause | Checkout Procedure |
|---|---|
| Shafts are dirty. | Clean the shafts as specified in the maintenance section of this manual. |
| Grinding shaft is at a severe angle. | Raise or lower one end of the shaft until approximately level. This grinder is not designed to operate at a severe angle. Adjust reel or setup until the shaft is approximately level. |

**PROBLEM-- Handwheel or vertical indicator gage "walks" during grinding.**

| Possible Cause | Checkout Procedure |
|---|---|
| Bracket connecting gage to vertical adjuster is loose. | Push lightly up and down on the digital gage to see if it is loose. Tighten the screws on the bracket to the vertical adjuster or remove the gage and tighten the screws from the bracket to the gage. |
| Plug and set screw loose. | Tighten the drag on the vertical shafts by tightening the setscrew located on the back of the vertical adjuster husing. (See Vertical Infeed Shaft Drag in the adjustment section.) |

**PROBLEM--Reels ground have high/low blades**

| Possible Cause | Checkout Procedure |
|---|---|
| Traverse Speed set too fast. | Check roundness using the digital gage. Traverse speed should be set approximately 12 ft/ min. (4 meters/min.) if roundness is varying. |

# MECHANICAL TROUBLESHOOTING (Continued)

**PROBLEM-- Uneven traverse speed or grinding stock removal from reel is irregular.**

| Possible Cause | Checkout Procedure |
|---|---|
| Linear bearings are damaged or have grit buildup causing uneven traversing load. | Clean shafts and bearings according to the lubrication of Grinding Shaft and Linear Bearings instructions in the Maintance Section of the manual. If problem persists replace linear bearings according to the replacement of linear bearings instructions. |
| Grinding shaft or wheels have grit buildup causing uneven loading. | Clean the wheel flanges and shaft (see Lubrication of Grinding Shaft). Replace flanges or shaft if necessary. |
| Left side traverse pulley is full of grit causing the pulley not to turn freely on shaft. | Clean and lubricate the shaft and pulley. |

**PROBLEM--Traverse Belt Slips**

| Possible Cause | Checkout Procedure |
|---|---|
| Clamping tip is not adjusted properly. | Adjust the clamping tip as specified in the Traverse Clamp Force section of this manual. |
| Too heavy a grind for traverse speed. | Slow the traverse speed or back off on the amount that is being infed. |

**PROBLEM-- Too heavy a burr on cutting edge of reel blades.**

| Possible Cause | Checkout Procedure |
|---|---|
| Traverse speed set too high causing a heavy burr on the reel blade when spin grinding. | Traverse speed should be set lower approximately 12 ft./min (4 meters/min.) for a smaller burr on the cutting edge. |

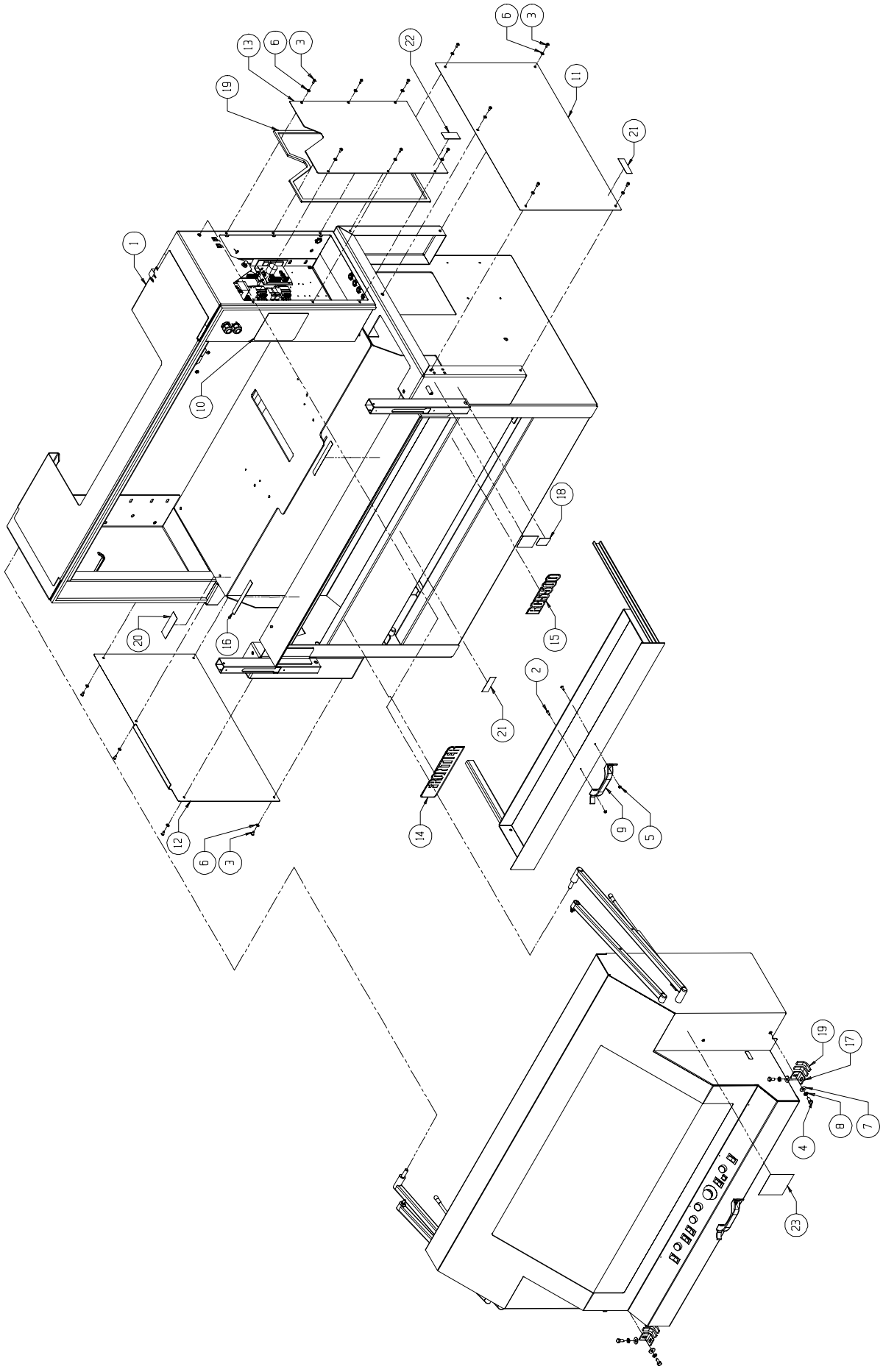
**PROBLEM--Cone shaped reel after grinding.**

| Possible Cause | Checkout Procedure |
|---|---|
| Grinding head travel not parallel to the reel center shaft. | Grinding head travel was not setup parallel to the reel center shaft in vertical and horizontal planes. See Align the Reel Section. |

**PROBLEM--Relief grind on the reel blades do not go the full length of the reel.**

| Possible Cause | Checkout Procedure |
|---|---|
| Need to adjust the finger stop. | Adjust finger stop and check for contact full length. |
| Need to dress the Wheel to the correct angle | Dress the wheel (For more detail, see relief grinding section in operating instructions of the manual.) |

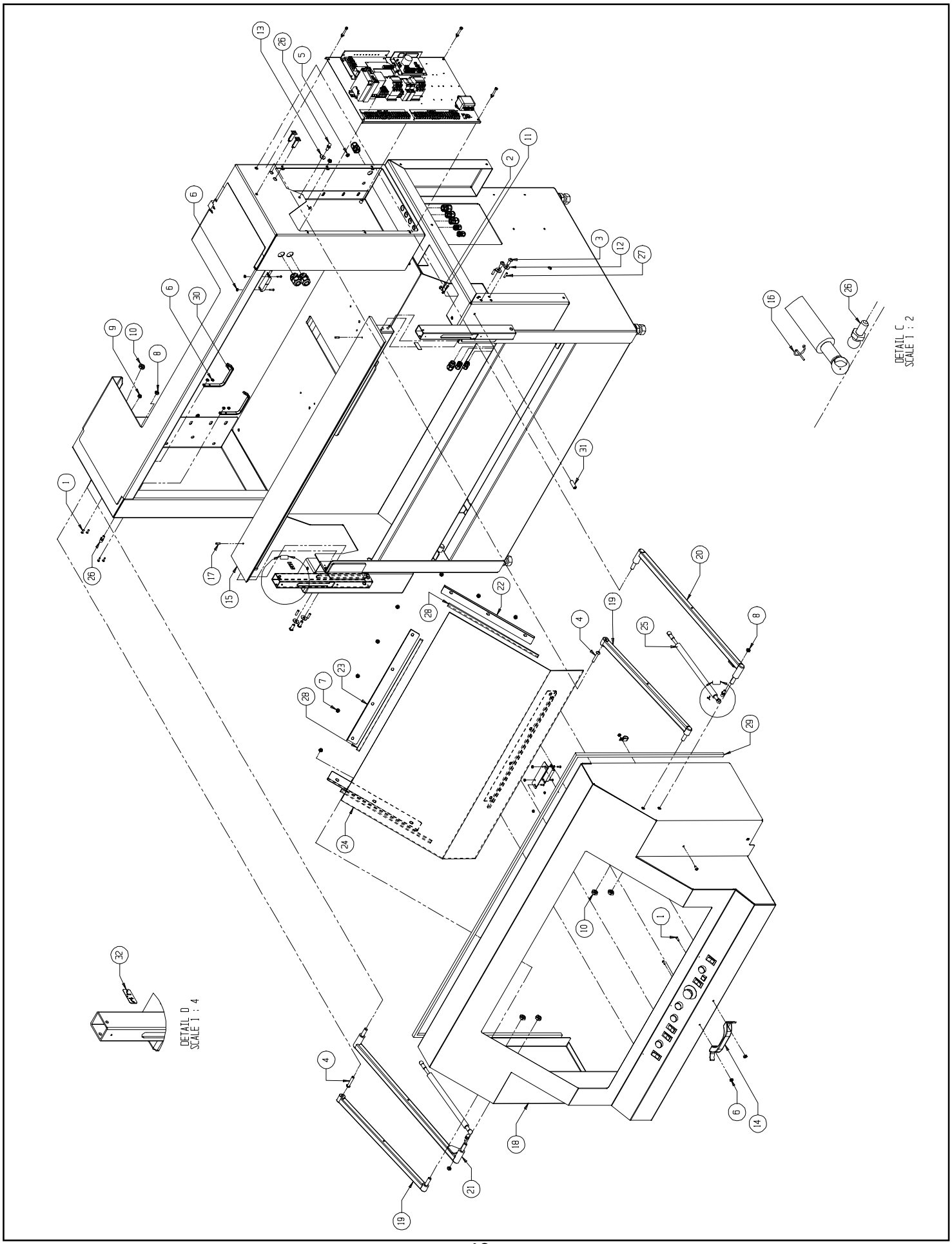
# EXPLODED VIEW: CABINET AND DOOR ASSEMBLY



# PARTS LIST: CABINET AND DOOR ASSEMBLY

| DIAGRAM NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 5NTRG5509504 | Cabinet Weldment |
| 2 | 5NTB191013 | 10-24 x 5/8 Button Head Socket Cap Screw |
| 3 | 5NTB250816 | 1/4-20 x 1/2 Button Head Socket Cap Screw |
| 4 | 5NTB371201 | 3/8-16 x 3/4 Hex head Cap Screw |
| 5 | 5NTJ197000 | 10-24 Locknut Jam Nylon Insert |
| 6 | 5NTK251501 | 1/4 Lockwasher Split |
| 7 | 5NTK370001 | 3/8 SAE Flat Washer |
| 8 | 5NTK371501 | 3/8 Lockwasher Split |
| 9 | 5NT09891 | Grab Handle Enclosure |
| 10 | 5NT55279 | Taper Chart Decal |
| 11 | 5NTRG5509001 | Side Cover Panel - Right Hand |
| 12 | 5NTRG5509002 | Side Cover Panel - Left Hand |
| 13 | 5NTRG5509003 | Electrical Cover Panel |
| 14 | 5NT155301 | Frontier Decal - Large (part of Label Sheet) |
| 15 | 5NT155301 | RG5500 Decal (part of Label Sheet) |
| 16 | 5NT155301 | Tooling Bar Position Decal (part of Label Sheet) |
| 17 | 5NT55490 | Door Shipping Bracket |
| 18 | 5NT80413 | Patent Decal |
| 19 | 5NT3708378 | Foam Strip .25 Thick (Sold per Foot) |
| 20 | | Wheel RPM Caution Decal (see page 7 of Operators Manual) |
| 21 | | Sharp Caution Decal (see page 7 of Operators Manual) |
| 22 | | Electrical Warning Decal (see page 7 of Operators Manual) |
| 23 | | Machine Caution Decal (see page 7 of Operators Manual) |
| | 5NT155301 | Tooling Location Decal (Not Shown- part of Label Sheet) |

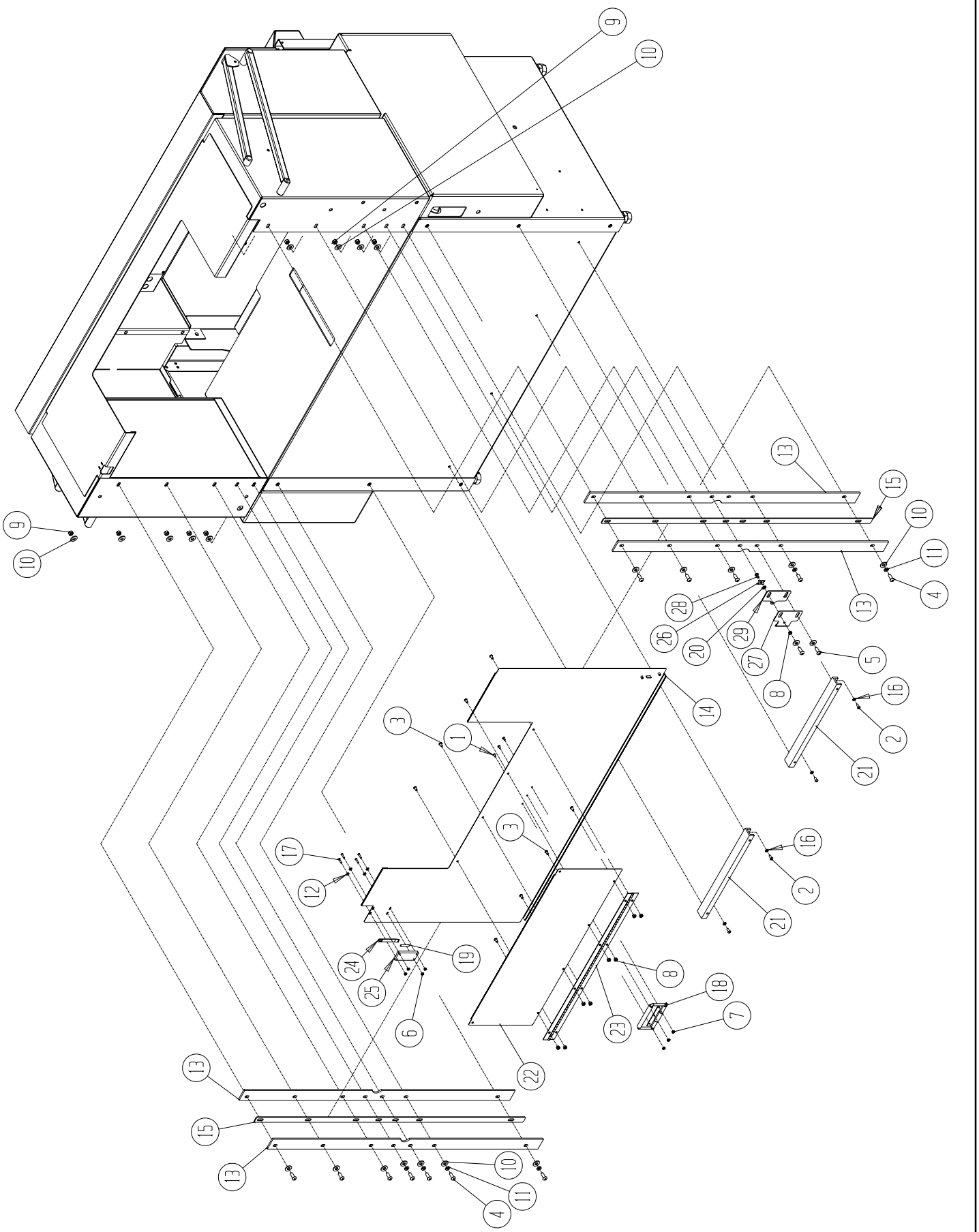
# EXPLODED VIEW: CABINET AND DOOR ASSEMBLY



# PARTS LIST: CABINET AND DOOR ASSEMBLY

| DIAGRAM NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 5NTB191013 | 10-24 x 5/8 Button Head Socket Cap Screw |
| 2 | 5NTB250801 | 1/4-20 x 1/2 Hex Head Cap Screw |
| 3 | 5NTB371616 | 3/8-16 x 1.0 Button Head Socket Cap Screw |
| 4 | 5NTB373216 | 3/8-16 x 2 Button Head Socket Cap Screw |
| 5 | 5NT3709372 | Hole Plug .50 Diameter |
| 6 | 5NTJ197000 | 10-24 Locknut Jam Nylon Insert |
| 7 | 5NTJ311000 | 5/16-18Hex Full Nut |
| 8 | 5NTJ317000 | 5/16 Locknut Jam Nylon Insert |
| 9 | 5NTJ377100 | 3/8-16 Locknut Full Nylon Insert |
| 10 | 5NTJ507000 | 1/2-13 Locknut Jam Nylon Insert |
| 11 | 5NTK251501 | 1/4 Lockwasher Split |
| 12 | 5NTK370101 | Flat Washer 3/8 Heavy |
| 13 | 5NTR000453 | 5/16 ID x 7/8 OD x 1/8 Thick Washer |
| 14 | 5NT09891 | Grab Handle Enclosure |
| 15 | 5NT50234 | Tooling Bar-Machined |
| 16 | 5NT80421 | Retaining Clip - Gas Spring |
| 17 | 5NTH251202 | .25 Diameter x 3/4" long Roll-Pin |
| 18 | 5NT55713 | Door Weldment |
| 19 | 5NT55430 | Arm Weldment - Short |
| 20 | 5NT55431 | Arm Weldment - Long Right Hand |
| 21 | 5NT55433 | Arm Weldment - Long Left Hand |
| 22 | 5NT6509182 | Window Retaining Bracket - Medium |
| 23 | 5NT6509110 | Window Retaining Bracket - Long |
| 24 | 5NT55465 | Polycarbonate Window - Formed |
| 25 | 5NT80416 | Air Spring |
| 26 | 5NT80418 | Air Spring Stud |
| 27 | 5NT3706075 | Spirol Pin .25 Dia. x 1.0 Long |
| 28 | 5NT3708378 | Foam Strip .25 Thick (Sold per Foot) |
| 29 | 5NT3708889 | Foam Seal .50 High (Sold per Foot) |
| 30 | 5NT3708890 | Storage Hook |
| 31 | 5NT3706044 | Gage Mounting Pin |
| 32 | 5NT6309111 | Up/Down Decal |

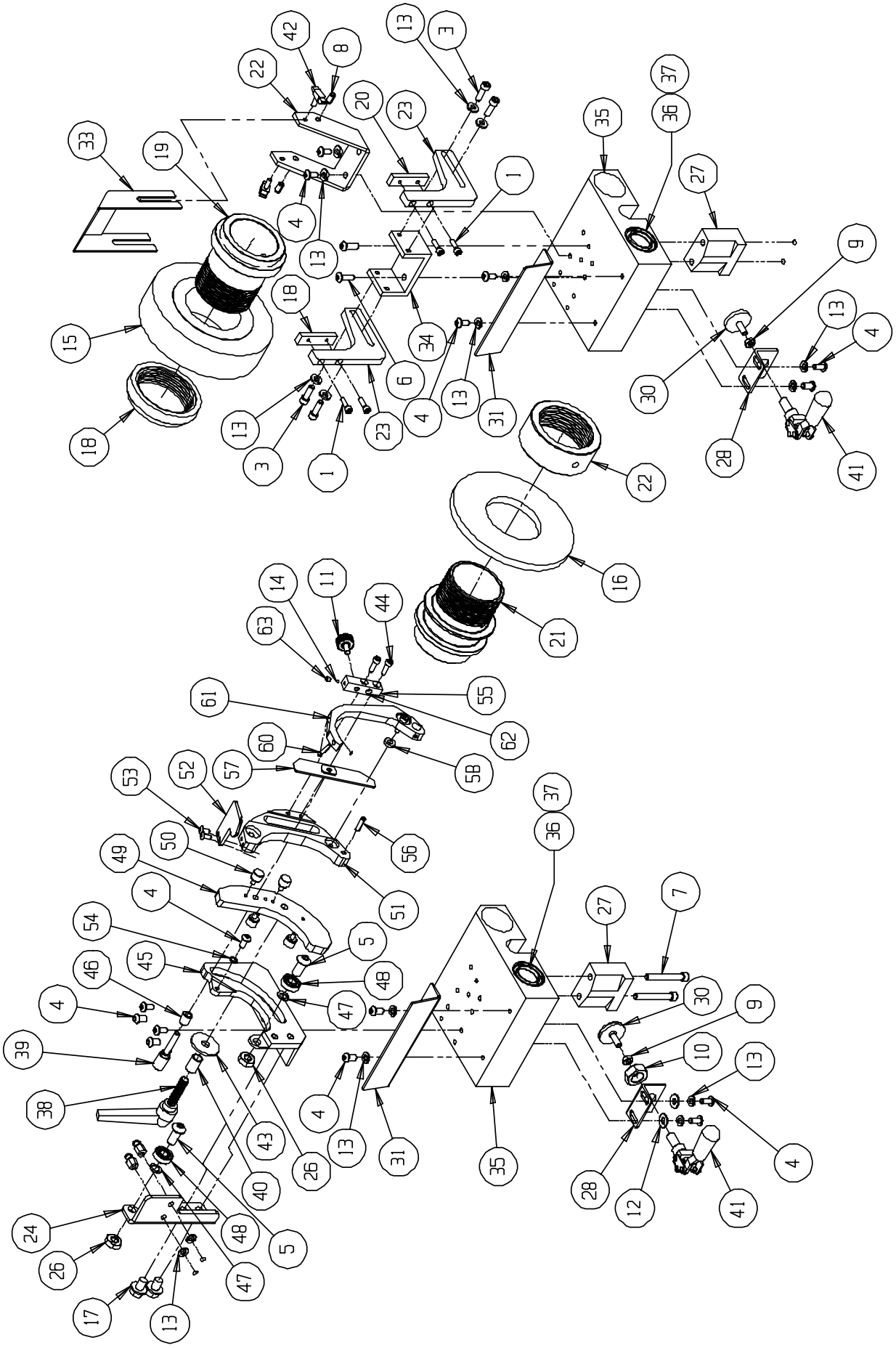
# PARTS LIST: REAR DOOR ASSEMBLY



# PARTS LIST: REAR DOOR ASSEMBLY

| DIAGRAM NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 5NTB190613 | Button Head Socket Cap Screw 10-24 x 3/8 Long |
| 2 | 5NTB251016 | Button Head Socket Cap Screw 1/4-20 x 5/8 Long |
| 3 | 5NTB250816 | Button Head Socket Cap Screw 1/4-20 x 1/2 Long |
| 4 | 5NTB372016 | Button Head Socket Cap Screw 3/8-16 x 1-1/4 Long |
| 5 | 5NTB372416 | Button Head Socket Cap Screw 3/8-16 x 1-1/2 Long |
| 6 | 5NTJ167000 | 8-32 Lock Nut Jam |
| 7 | 5NTJ197000 | 10-24 Lock Nut Jam |
| 8 | 5NTJ257100 | 1/4-20 Lock Nut |
| 9 | 5NTJ377000 | 3/8-16 Lock Nut Jam |
| 10 | 5NTK370001 | 3/8 Flat Washer |
| 11 | 5NTK371501 | 3/8 Lock Washer |
| 12 | 5NTK160001 | No. 8 Flat Washer |
| 13 | 5NT6329135 | Rear Door Slide |
| 14 | 5NT6329551 | Slide Up Rear Door Weldment |
| 15 | 5NT6329136 | Rear Slide Spacer Plate |
| 16 | 5NTK251501 | 1/4 Lock Washer |
| 17 | 5NT3708819 | 8-32 x .75 Button Head Safety Screw |
| 18 | 5NT3708992 | Folding Handle |
| 19 | 5NT3708997 | Compression Spring .24 OD x 1.5 Long |
| 20 | 5NT3708998 | Wave Spring .35 ID |
| 21 | 5NT6209165 | Lower Guide Bar |
| 22 | 5NT6329029 | Hinged Walker Panel |
| 23 | 5NT3708869 | Spring Hinge |
| 24 | 5NT6329127 | Door Safety Switch Key |
| 25 | 5NT6329128 | Door Key Housing |
| 26 | 5NT6329131 | Catch |
| 27 | 5NT6329132 | Catch Bracket |
| 28 | 5NT6329133 | Catch Pin |
| 29 | 5NT6329134 | Catch Spacer Plate |

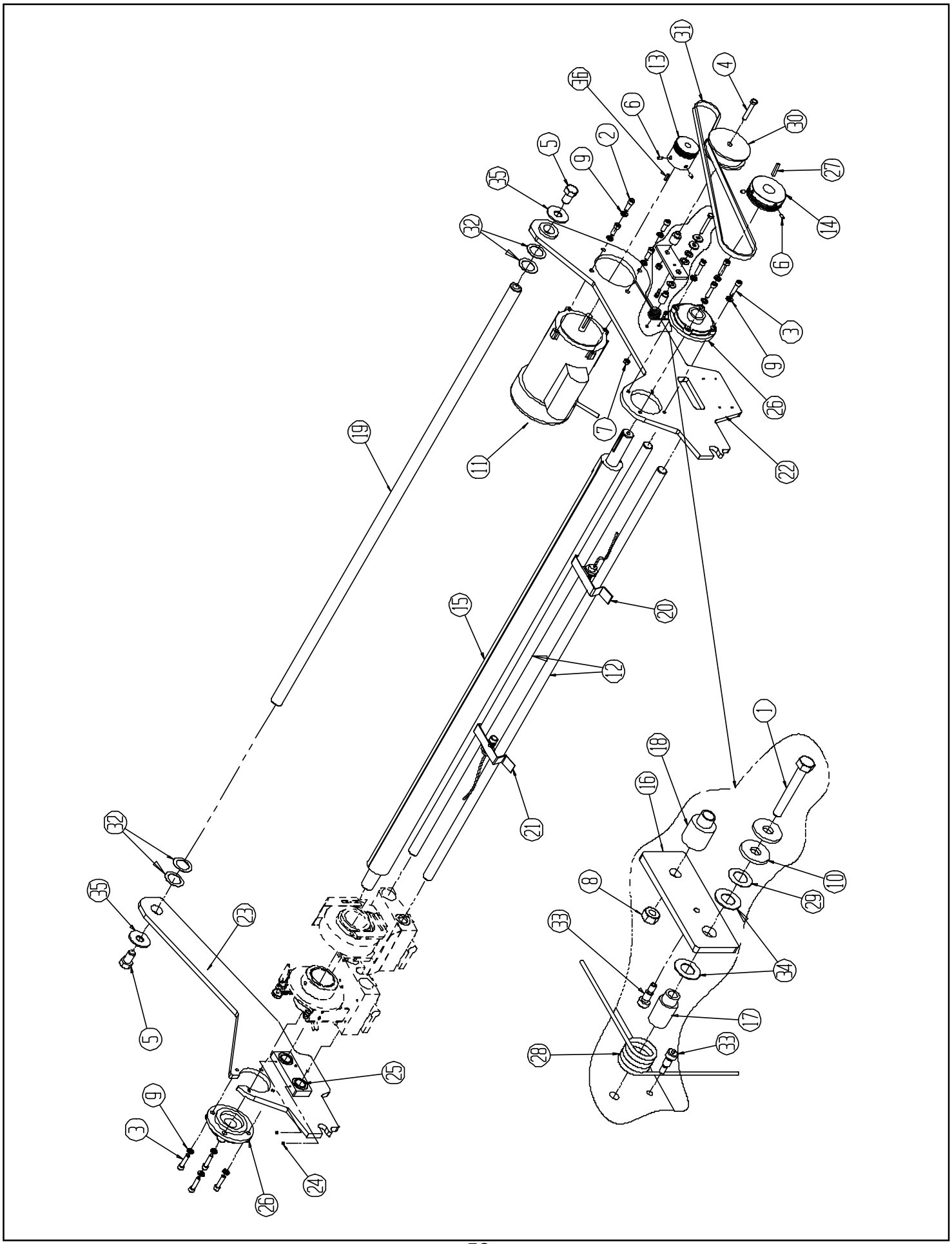
# EXPLODED VIEW: GRINDING HEAD ASSEMBLY



# PARTS LIST: GRINDING HEAD ASSEMBLY

| DIAGRAM NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 5NTB191011 | 10-24 X 5/8 Socket Head Cap Screw |
| 2 | 5NT3708848 | 1/4-28 x 1/2 Socket Head Cap Screw w/ patch |
| 3 | 5NTB251211 | 1/4-20 x 3/4 Socket Head Cap Screw |
| 4 | 5NTB250816 | 1/4-20 x 1/2 Button Head Socket Cap Screw |
| 5 | 5NTB371216 | 3/8-16 x 3/4 Button Head Socket Cap Screw |
| 6 | 5NTB251216 | 1/4-20 x 3/4 Button Head Socket Cap Screw |
| 7 | 5NTB253211 | 1/4-20 x 2.00 Socket Head Cap Screw |
| 8 | 5NTH250802 | Roll Pin .25D x .50 Lg |
| 9 | 5NTJ252000 | 1/4-20 Hex Jam Nut |
| 10 | 5NTJ627200 | 5/8-18 Locknut Jam Nylon |
| 11 | 5NT3708854 | 1/4-20 Knob Assembly |
| 12 | 5NTK250001 | Flat Washer 1/4 |
| 13 | 5NTK251501 | 1/4 Lockwasher Split |
| 14 | 5NT3709852 | 1/8" Diameter Nylon Ball |
| 15 | 5NT05720 | Grinding Wheel 6 x 2.75B x 1.5W 46G |
| 16 | 5NT05731 | Grinding Wheel 6 x 2.75B x .38W 24G Type 1 |
| 17 | 5NT3708839 | 3/8-16 x 1/2 Screw w/locking Flange |
| 18 | 5NT50037 | Spin Flange Nut |
| 19 | 5NT50039 | Spin Wheel Flange |
| 20 | 5NT50073 | Wear Pad |
| 21 | 5NT55200 | Relief Wheel Flange |
| 22 | 5NT55201 | Relief Flange Nut |
| 23 | 5NT50204 | Spin Yoke |
| 24 | 5NT55298 | Bearing Support Bracket |
| 25 | 5NT3708846 | Ball Bearing .25 ID x .625 OD |
| 26 | 5NTJ377000 | 3/8-16 Locknut Jam Nylon |
| 27 | 5NT50297 | Traverse Shoe |
| 28 | 5NT50298 | Traverse Clamp Bracket |
| 29 | 5NT55296 | Single Bearing Assembly |
| 30 | 5NT50310 | Belt Clamp Tip |
| 31 | 5NT50320 | Traverse Guard |
| 32 | 5NT50321 | Shield Mount Bracket |
| 33 | 5NT50324 | Spark Shield |
| 34 | 5NT50329 | Spin Support |
| 35 | 5NT55582 | Bearing Housing Assembly |
| 36 | 5NT09404 | Linear Bearing |
| 37 | 5NT3709209 | Oil Seal 1"ID x 1.57"OD x .187 |
| 38 | 5NT3708561 | Adjustable Handle 3/8-16 x 1.56 Long |
| 39 | 5NT3708835 | Adjustable Handle 1/4-20 x 1.25 Long |
| 40 | 5NT27115 | Spacer - .386 ID x .50 OD x .75 Long |
| 41 | 5NT80335 | Destaco 602 Clamp |
| 42 | 5NT80337 | T-knob Assembly |
| 43 | 5NT3589106 | Washer |
| 44 | 5NTB191031 | 10-32 x 5/8 Socket Head Cap Screw |
| 45 | 5NT55297 | Finger Rotate Base |
| 46 | 5NT6009057 | Spacer .265 ID x .438 OD x .50 L |
| 47 | 5NT3708999 | Flat Washer .38 ID x .56 ID x .03Thick |
| 48 | 5NT3708036 | Bearing |
| 49 | 5NT55112 | Cam Plate |
| 50 | 5NT80392 | Cam Follower - 1/2" Diameter |
| 51 | 5NT55113 | Finger Slide |
| 52 | 5NT55117 | Fixed Finger |
| 53 | 5NTB190634 | 10-32 x 3/8" Button Head Socket Cap Screw |
| 54 | 5NT3249153 | Flat Washer .25 ID x .38 OD x .02 Thick |
| 55 | 5NT55281 | Index Finger Stop Block |
| 56 | 5NTH181202 | 3/16 x 3/4" long Roll Pin |
| 57 | 5NT55579 | Locking Plate Weldment |
| 58 | 5NT3708833 | Spacer - .252 ID x .50 OD x .125 Long |
| 59 | 5NTC190467 | 10-32 x 1/4" Socket Head Set screw |
| 60 | 5NT55127 | 3/16 Diameter Index Stop Pin |
| 61 | 5NT55501 | Indexing Finger Assembly |
| 62 | 5NT3708107 | Compression Spring |
| 63 | 5NTC190360 | 10-32 x 3/8" Socket Head Set screw |

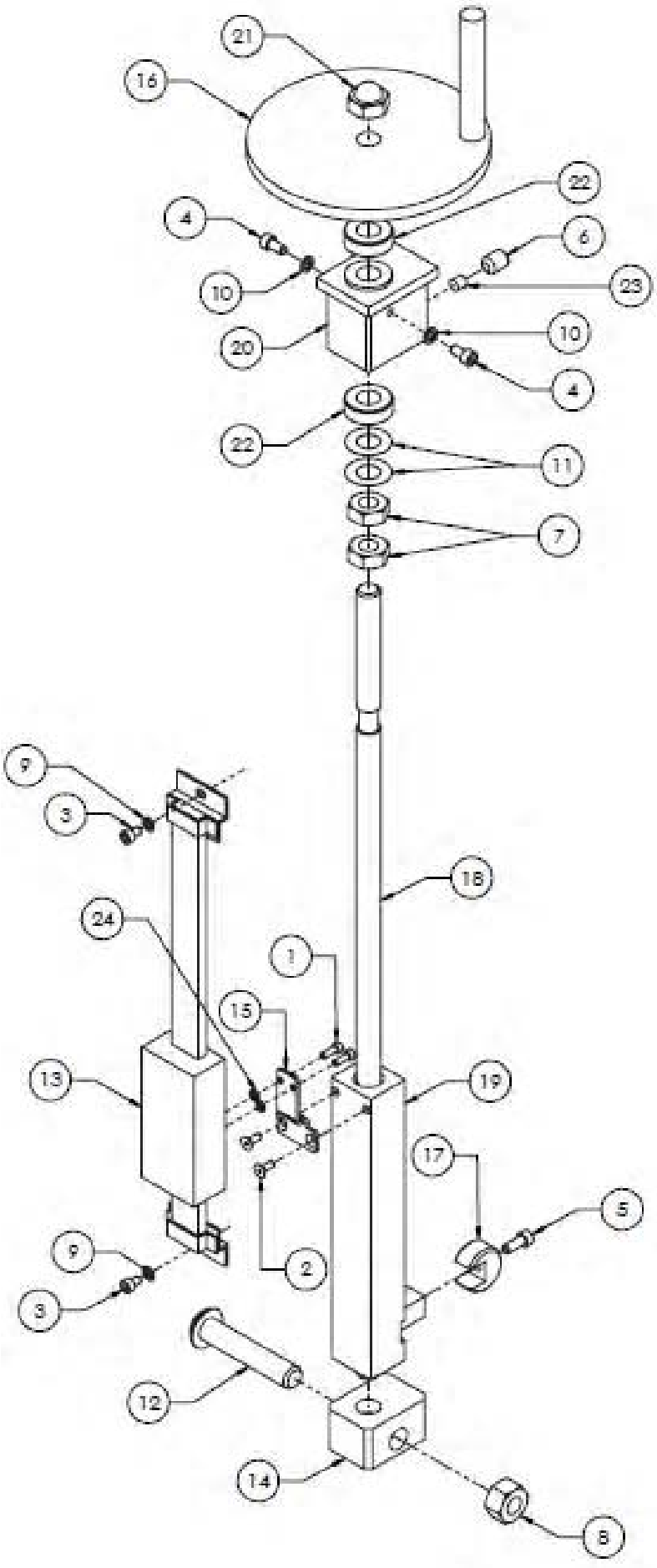
# PARTS LIST: PIVOT ARM AND GRINDING SHAFT ASSY 1 of 2



# PARTS LIST: PIVOT ARM AND GRINDING SHAFT ASSY 1 of 2

| DIAGRAM NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 5NTB313601 | 5/16-18 x 2-1/4 Hex Head Cap Screw |
| 2 | 5NTB371611 | 3/8-16 x 1 Socket Head Cap Screw |
| 3 | 5NTB372411 | 3/8-16 x 1-1/2 Socket Head Cap Screw |
| 4 | 5NTB373601 | 3/8-16 x 2-1/4 Hex Head Cap Screw |
| 5 | 5NTB752001 | 3/4-10 x 1.25 Hex Head Cap Screw |
| 6 | 5NTC250820 | 1/4-20 x 1/2 Cup Point Set Screw |
| 7 | 5NTJ317000 | 5/16-18 Locknut Nylon Jam |
| 8 | 5NTJ377100 | 3/8-16 Locknut Hex Nylok Full |
| 9 | 5NTK371501 | 3/8 Lockwasher Split |
| 10 | 5NTR000453 | Flat Washer .31 x .88 x .104T |
| 11 | 5NT3707690 | Motor 1HP |
| 12 | 5NT50235 | Traverse Shaft |
| 13 | 5NT50236 | Pulley 2.45 Diameter Poly V |
| 14 | 5NT50237 | Pulley 3.72 Diameter Poly V |
| 15 | 5NT50256 | Grinding Wheel Shaft |
| 16 | 5NT50279 | Tensioner Bar |
| 17 | 5NT50280 | Tensioner Pivot Shaft |
| 18 | 5NT50281 | Tensioner Pulley Shaft |
| 19 | 5NT50282 | Pivot Support Shaft |
| 20 | 5NT50311 | Prox Switch Holder R.H. |
| 21 | 5NT50318 | Prox Switch Holder L.H. |
| 22 | 5NT55404 | Arm Assembly R.H. |
| 23 | 5NT55407 | Arm Assembly L.H. |
| 24 | 5NTC190420 | 10-24 x 1/4 Cup Point Set Screw |
| 25 | 5NT09680 | Torrington Bearing |
| 26 | 5NT80336 | Piloted Bearing Flange |
| 27 | 5NT80338 | Key .25 sq x 1.25 Lg |
| 28 | 5NT80342 | Torsion Spring |
| 29 | 5NT80343 | Conical Washer .539 x .862 x .014T |
| 30 | 5NT80349 | Idler Pulley 4.0 Diameter |
| 31 | 5NT80350 | Poly V Belt |
| 32 | 5NT80351 | Conical Washer 1.40 x 2.03 x .024T |
| 33 | 5NT3708425 | Shoulder Bolt .313 D x .375 L |
| 34 | 5NT3709019 | Thrust Washer .500 x .937 x .032 T |
| 35 | 5NT3709886 | Flat Washer .812 x 2.25 x.135 T |
| 36 | 5NT80126 | Key 3/10 sq x 1.00 Lg |

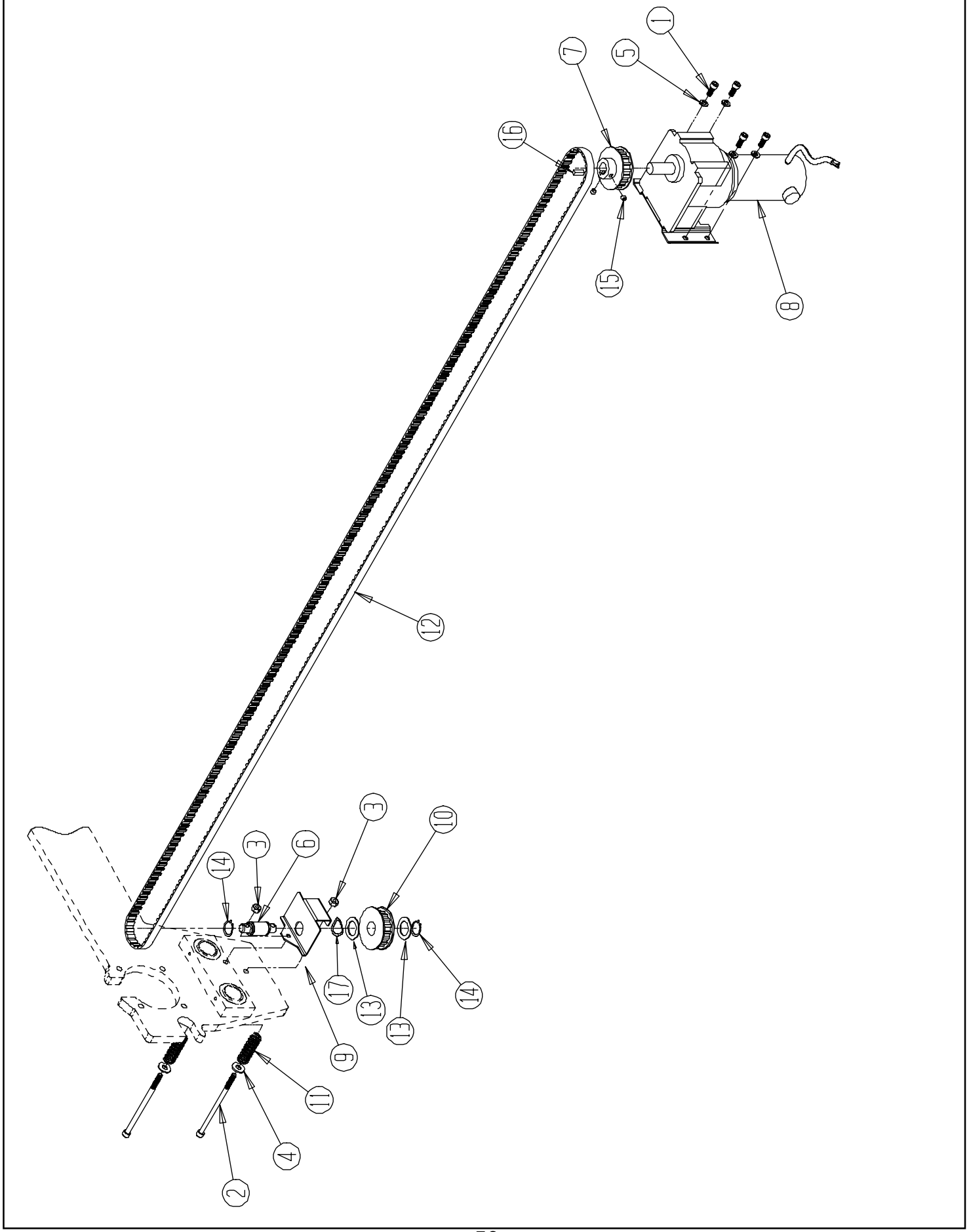
## EXPLODED VIEW: PIVOT ARM & GRINDING SHAFT ASSY 2 of 2



# PARTS LIST: PIVOT ARM & GRINDING SHAFT ASSY 2 of 2

| DIAGRAM NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 5NTB120311 | 5-40 X .188 Lg Socket Head Cap Screw |
| 2 | 5NTB130605 | 6-32 x 3/8 Flat Head Socket Cap Screw |
| 3 | 5NTB160411 | 8-32 x 1/4 Socket Head Cap Screw |
| 4 | 5NTB190611 | 10-24 x 3/8 Socket Head Cap Screw |
| 5 | 5NTB190831 | 10-24 x 1/2 Socket Head Cap Screw |
| 6 | 5NTC370820 | 3/8-16 x 1/2 Cup Point Set Screw |
| 7 | 5NTJ502000 | 1/2-13 Hex Jam Nut |
| 8 | 5NTJ507100 | 1/2-13 Locknut Full Nylon |
| 9 | 5NTK161501 | #8 Lockwasher Split |
| 10 | 5NTK191501 | #10 Lockwasher Split |
| 11 | 5NT80428 | Washer Conical .53 x 1.13 x .06T |
| 12 | 5NT09299 | 1/2-13 x 2.5 Lg Button Head Socket Cap Screw |
| 13 | 5NT09707 | Digital Scale, 6" Mitutoyo #572 |
| 14 | 5NT50095 | Mounting Block |
| 15 | 5NT50283 | Gage Mounting Bracket |
| 16 | 5NT55472 | Handwheel 1/2-13 ID |
| 17 | 5NT50325 | Arm Support Pivot |
| 18 | 5NT50348 | Vertical Adjustment Shaft |
| 19 | 5NT50573 | Vertical Adjuster Assembly |
| 20 | 5NT50591 | Cap Assembly |
| 21 | 5NT80344 | Hex Acorn Nut 1/2-13 |
| 22 | 5NT3709042 | Ball Bearing Thrust Nice #603-1/4 |
| 23 | 5NT7469149 | Nylon Plug 5/16 Diameter |
| 24 | 5NTK121501 | # 5 Split Lockwasher |

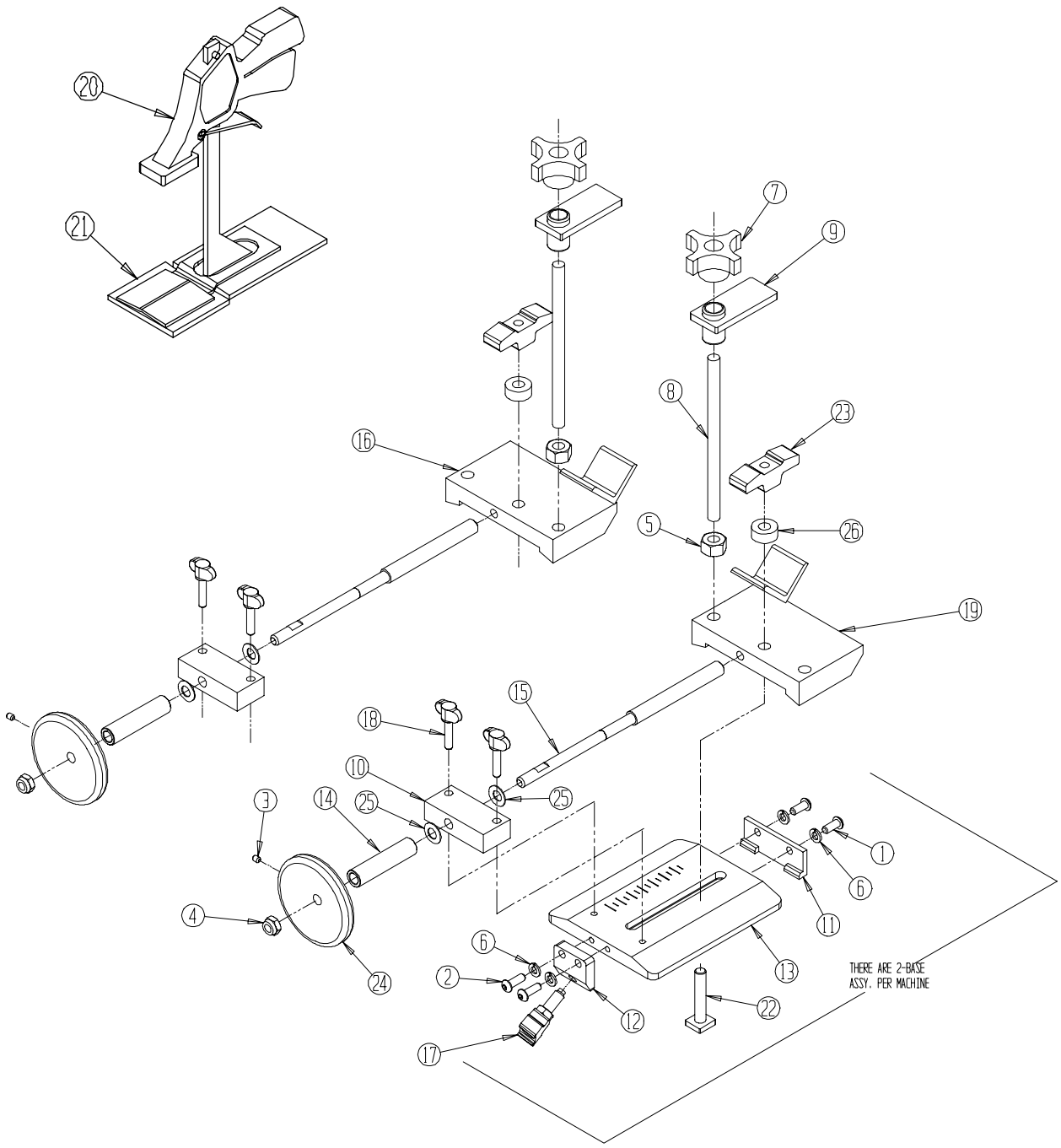
# EXPLODED VIEW: TRAVERSE DRIVE ASSEMBLY



# PARTS LIST: TRAVERSE DRIVE ASSEMBLY

| DIAGRAM NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 5NTB251011 | 1/4-20 X 5/8 Socket Head Cap Screw |
| 2 | 5NTB257211 | 1/4-20 x 4.5 Socket Head Cap Screw |
| 3 | 5NTJ257000 | 1/4-20 Locknut Thin |
| 4 | 5NTK250001 | Flat Washer 1/4 |
| 5 | 5NTK251501 | 1/4 Lockwasher Split |
| 6 | 5NT50309 | Traverse Pulley Shaft |
| 7 | 5NT3706056 | Cog Pulley Drive |
| 8 | 5NT6059062 | Motor Assembly Trav W16 |
| 9 | 5NT50363 | Traverse Pulley Guard |
| 10 | 5NT55553 | Cog Pulley Driven .375 P .50W |
| 11 | 5NT80353 | Die Spring .34 ID x 2.0 Lg |
| 12 | 5NT80354 | Cog Belt |
| 13 | 5NT80355 | Thrust Washer .75 ID x 1.25 OD |
| 14 | 5NT3709331 | Retaining Ring |
| 15 | 5NTC250460 | 1/4-28 x 1/4 Socket Head Set Screw |
| 16 | 5NT80126 | 3/16 SQ x 1.00 Key |
| 17 | 5NT3708419 | Wave Spring .78 ID x 1.00 OD |

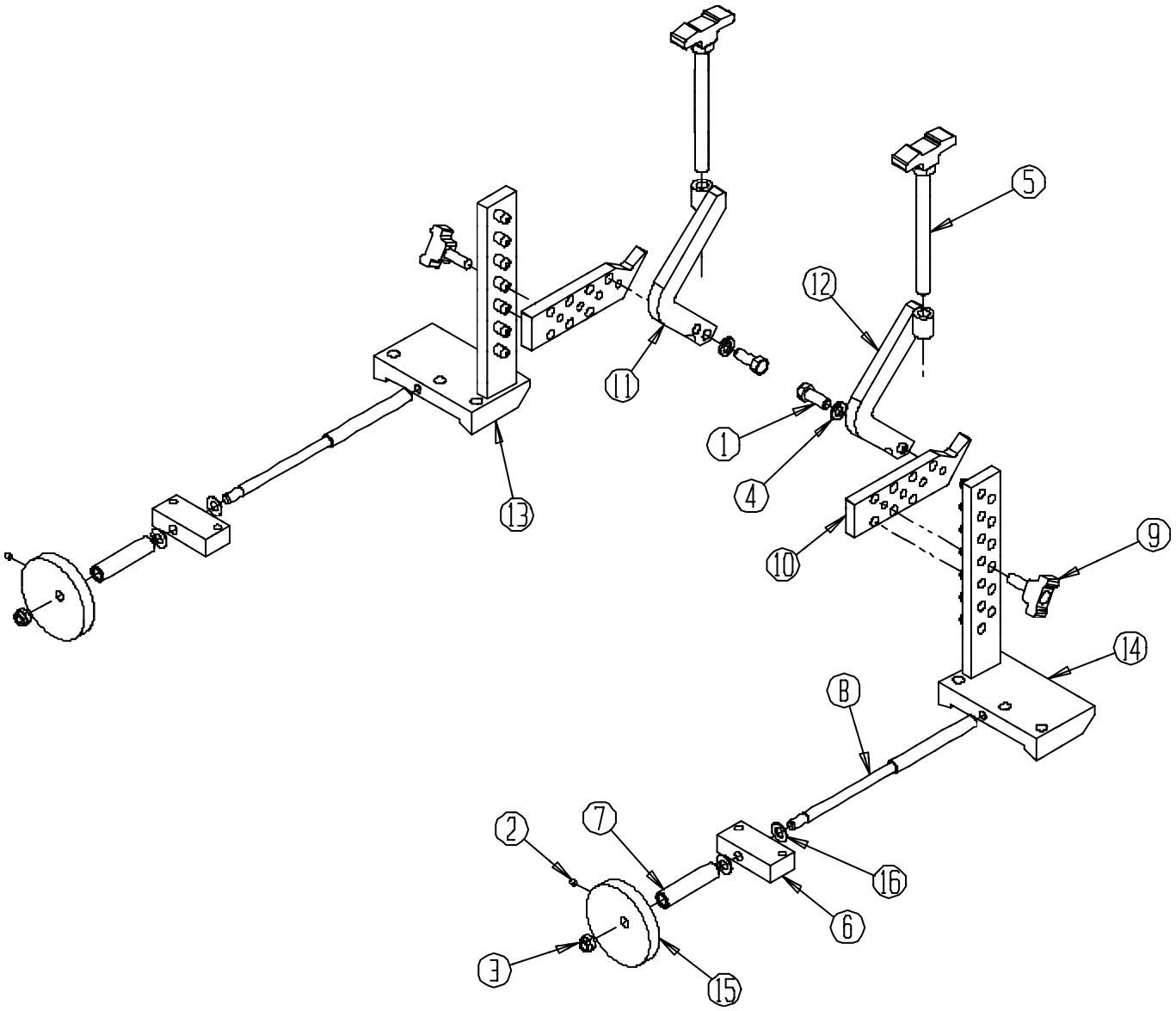
# EXPLODED VIEW: MOWER SUPPORT ASSEMBLY



# PARTS LIST: MOWER SUPPORT ASSEMBLY

| DIAGRAM NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 5NTB251016 | 1/4-20 X 5/8 Button Head Cap Screw |
| 2 | 5NTB251216 | 1/4-20 x 3/4 Button Head Cap Screw |
| 3 | 5NTC250420 | 1/4-20 x 1/4 Cup Point Set Screw |
| 4 | 5NTJ377000 | 3/8-16 Locknut Jam Nylon |
| 5 | 5NTJ502000 | 1/2-13 Hex Jam Nut |
| 6 | 5NTK251501 | 1/4 Lockwasher Split |
| 7 | 5NT09853 | Knob 4 prong 1/2-13 F |
| 8 | 5NT17119 | Threaded Stud 1/2-13 x 65 Lg |
| 9 | 5NT50242 | Roller Clamp Weldment |
| 10 | 5NT50288 | Tooling Block Adjustment |
| 11 | 5NT50290 | Front Clamp Plate |
| 12 | 5NT50291 | Clamp Block |
| 13 | 5NT55449 | Tooling Base Plate |
| 14 | 5NT55376 | Tooling Spacer |
| 15 | 5NT55374 | Acme Shaft L.H. Tooling |
| 16 | 5NT50568 | V Roller Weldment L.H. |
| 17 | 5NT50570 | T-Knob Assembly 3/8-16 x .75 Dog Point |
| 18 | 5NT80396 | Knob Assembly 1/4-20 x 1.0 Lg |
| 19 | 5NT55506 | V Roller Weldment R.H. |
| 20 | 5NT50254 | Rear Roller Clamp Weldment |
| 21 | 5NT70512 | Roller Roller Bracket Weldment |
| 22 | 5NT80346 | Bolt T Slot 3/8-16 x 2.0 Lg |
| 23 | 5NT3708245 | Knob T 235 3/8-16 F |
| 24 | 5NT3708393 | Handwheel 3.50 Diameter |
| 25 | 5NT3709062 | Conical Washer .382 x .75 x .035 T |
| 26 | 5NT3889045 | Spacer .406 ID x .88 OD x .38Long |

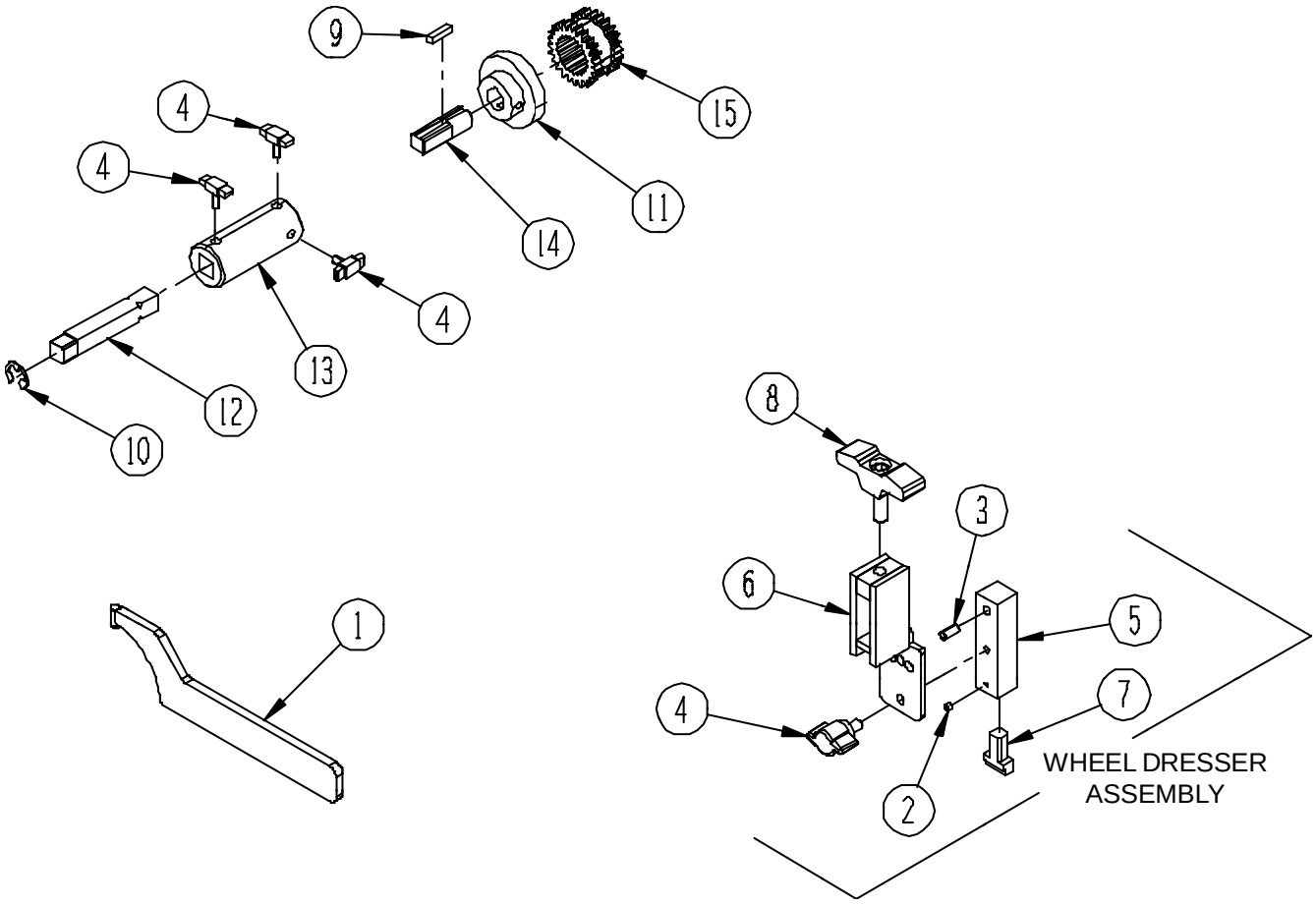
# EXPLODED VIEW:VERTICAL MOWER SUPPORT ASSEMBLY



# PARTS LIST: VERTICAL MOWER SUPPORT ASSEMBLY

| DIAGRAM NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 5NTB371601 | 3/8-16 X 1 Hex Head Cap Screw |
| 2 | 5NTC250420 | 1/4-20 x 1/4 Cup Point Cap Screw |
| 3 | 5NTJ377000 | 3/8-16 Locknut Jam Nylon |
| 4 | 5NTK371501 | 3/8 Lockwasher Split |
| 5 | 5NT17519 | Knob T Assembly 1/2-13 x 6.5" |
| 6 | 5NT50288 | Tooling Block Adjustment |
| 7 | 5NT55376 | Tooling Spacer |
| 8 | 5NT55374 | Acme Shaft L.H. Tooling |
| 9 | 5NT50592 | Knob T 3/8-16 x 1.0 Lg |
| 10 | 5NT55282 | Hanger "V" |
| 11 | 5NT55343 | Clamp Weldment Large L.H. |
| 12 | 5NT55358 | Clamp Weldment Large R.H. |
| 13 | 5NT55511 | Tooling Post Assembly L.H. |
| 14 | 5NT55512 | Tooling Post Assembly R.H. |
| 15 | 5NT3708393 | Handwheel 3.50 Dia. |
| 16 | 5NT3709062 | Conical Washer .382 Id x .75 OD x .035 Thick |

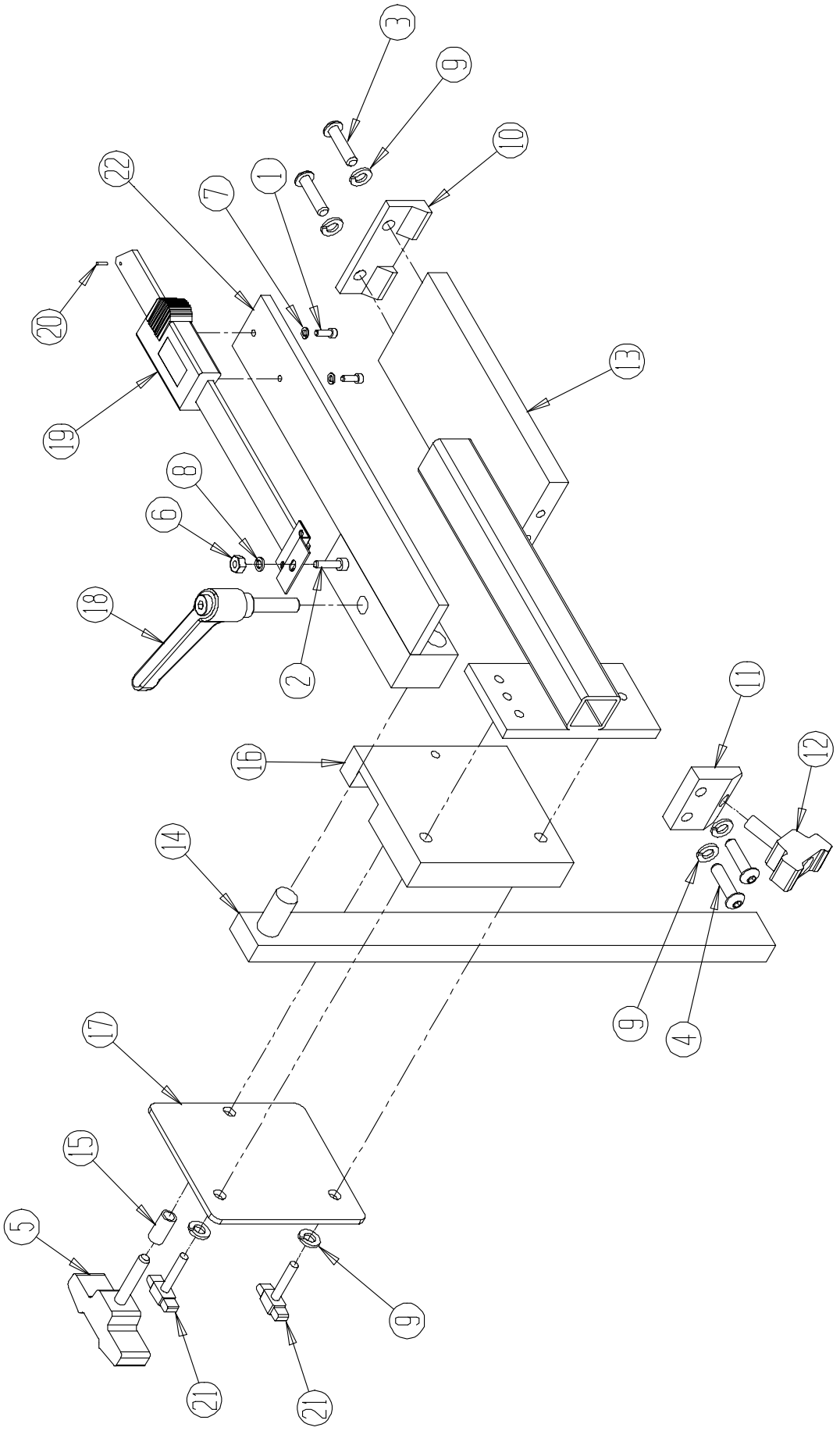
# EXPLODED VIEW: CARTON ASSEMBLY



# PARTS LIST: CARTON ASSEMBLY

| DIAGRAM NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 5NT50014 | Spanner Wrench |
| 2 | 5NTC190320 | #10-24 x 3/16 Socket Head Setscrew |
| 3 | 5NTH250802 | 1/4" x 1/2" Roll Pin |
| 4 | 5NT09394 | 1/4-20 2-prong Knob |
| 5 | 5NT55122 | Dresser Support Block |
| 6 | 5NT55461 | Dresser Support Weldment |
| 7 | 5NT3708845 | 3/4 Wide x 1/4 Thick Diamond Dresser |
| 8 | 5NT6509588 | T-Knob Assembly |
| 9 | 5NTR000377 | Sq Key 3/16 x .75 |
| 10 | 5NT3709073 | Retaining Ring |
| 11 | 5NT3709584 | Flange Coupler .625 Bore |
| 12 | 5NT6009051 | Drive Adapter 1/2 sq 3.5 Lg |
| 13 | 5NT6009052 | Adapter |
| 14 | 5NT6009217 | Driver Coupler Adapter |
| 15 | 5NT3709585 | Sleeve Coupler |
| | 5NT55022 | Compensation for Taper Chart (Not Shown) |

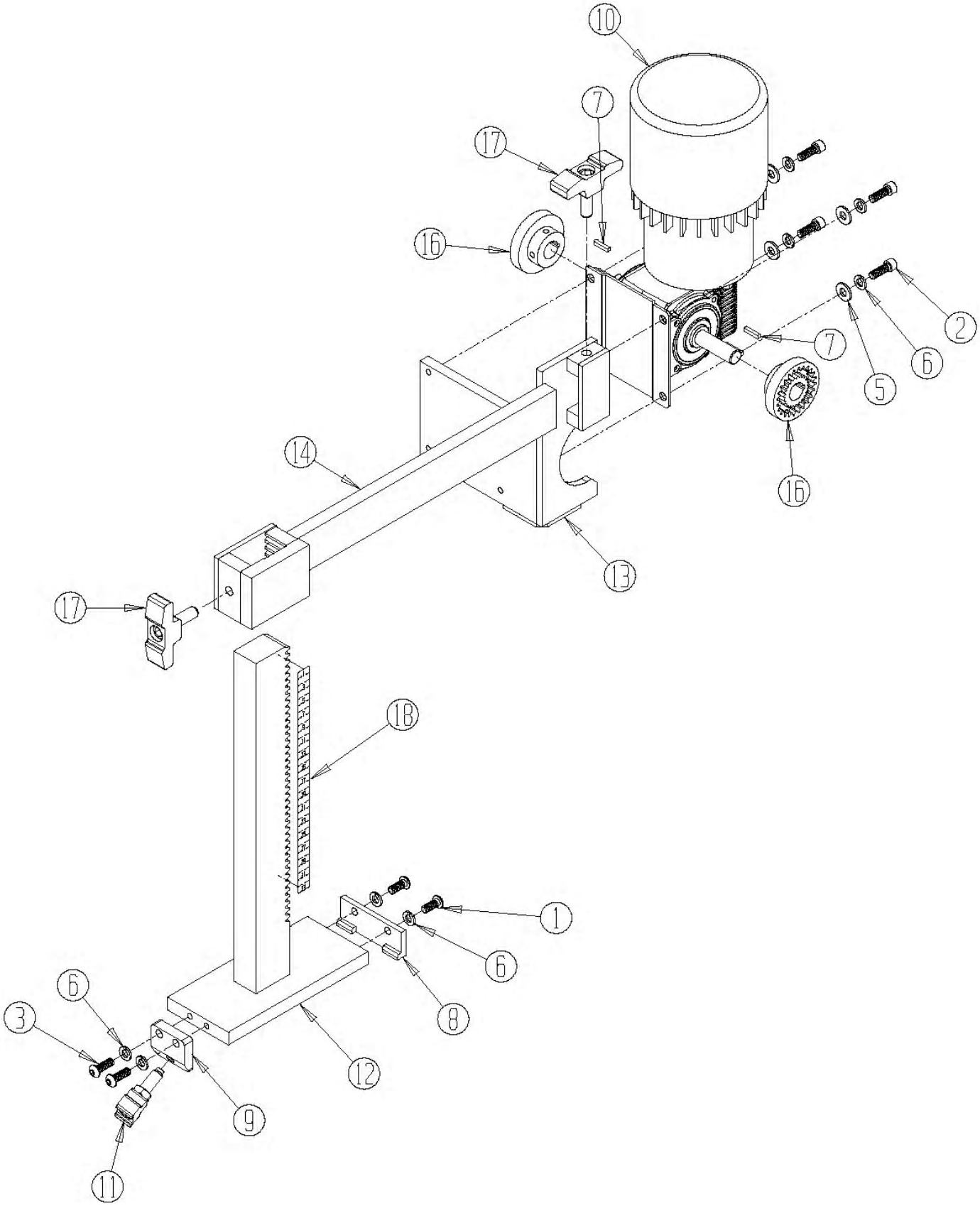
# EXPLODED VIEW: ALIGNMENT GAGE ASSEMBLY



# PARTS LIST: ALIGNMENT GAGE ASSEMBLY

| DIAGRAM NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 5NTB120611 | 5-40 x .38 Socket Head Cap Screw |
| 2 | 5NTB161011 | 8-32 x 5/8 Socket Head Cap Screw |
| 3 | 5NTB251016 | 1/4-20 x 5/8 Button Head Socket Cap Screw |
| 4 | 5NTB251216 | 1/4-20 x 3/4 Button Head Socket Cap Screw |
| 5 | 5NT6609501 | Knob Assembly T 1/4-20 x 1.31 Long |
| 6 | 5NTJ161000 | 8-32 Hex nut |
| 7 | 5NTK121501 | #5 Lockwasher Split |
| 8 | 5NTK161501 | #8 Lockwasher Split |
| 9 | 5NTK251501 | 1/4 Lockwasher Split |
| 10 | 5NT50290 | Front Clamp Plate |
| 11 | 5NT50291 | Clamp Block |
| 12 | 5NT50570 | T-Knob Assembly 3/8-16 x .75 Dog Point |
| 13 | 5NT50586 | Gage Base Weldment |
| 14 | 5NT50597 | Gage Bar Assembly Vertical |
| 15 | 5NT3529069 | Spacer .25 ID x .375 OD x .69 Long |
| 16 | 5NT6509418 | Pivot Plate Machined |
| 17 | 5NT6509349 | Retainer Plate |
| 18 | 5NT3708094 | Adjustable Handle 5/16-18 x 1.25 Long |
| 19 | 5NT6509359 | Digital Gage Machined |
| 20 | 5NTH060302 | Roll Pin .063 D x .188 Long |
| 21 | 5NT80396 | Knob T 1/4-20 x 1.18 Long |
| 22 | 5NT6329556 | Gage Base Weldment |

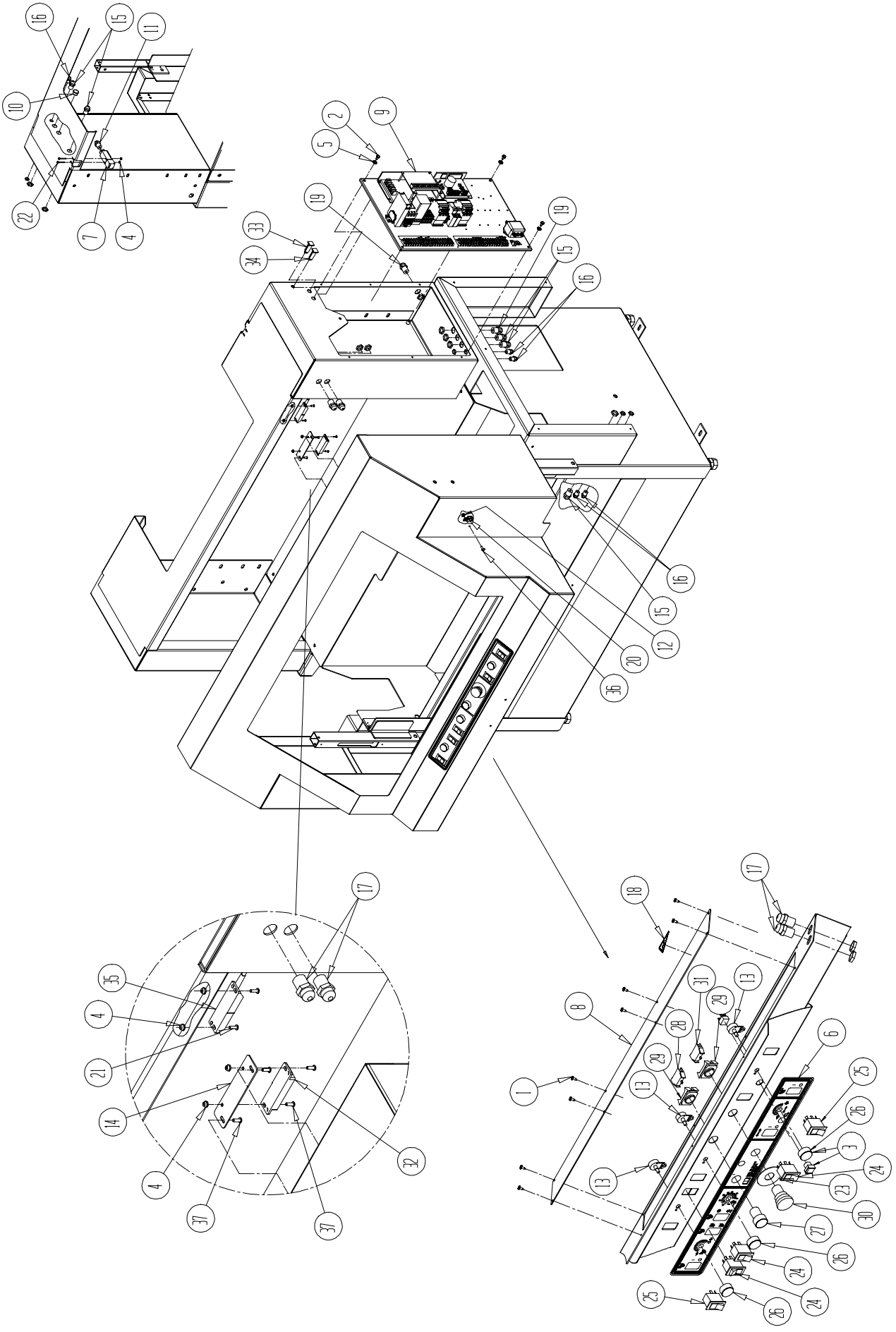
## EXPLODED VIEW: SPIN DRIVE ASSEMBLY



# PARTS LIST: SPIN DRIVE ASSEMBLY

| DIAGRAM NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 5NTB251016 | 1/4-20 x 5/8 Button Head Socket Cap Screw |
| 2 | 5NTB251211 | 1/4-20 x 3/4 Socket Head Cap Screw |
| 3 | 5NTB251216 | 1/4-20 x 3/4 Button Head Socket Cap Screw |
| 5 | 5NTK250001 | Flat Washer 1/4 |
| 6 | 5NTK251501 | 1/4 Lockwasher Split |
| 7 | 5NTR000376 | Sq Key 1/8 x .75 |
| 8 | 5NT50290 | Front Clamp Plate |
| 9 | 5NT50291 | Clamp Block |
| 10 | 5NT6329160 | Motor Spin Assembly Spin |
| | 5NT3707623 | DC Motor Brush (for Service - not shown) |
| 11 | 5NT50570 | T-Knob Assembly 3/8-16 x .75 Dog Point |
| 12 | 5NT50585 | Spin Mount Weldment Vertical |
| 13 | 5NT55437 | Spin Mount Weldment |
| 14 | 5NT55442 | Spin Arm Weldment Horizontal |
| 16 | 5NT3709586 | Flange Coupler .50 Bore |
| 17 | 5NT6509588 | Knob Assembly T 2.5 3/8-16 x 1.00L |
| 18 | 5NT6329072 | Decal - Scale |

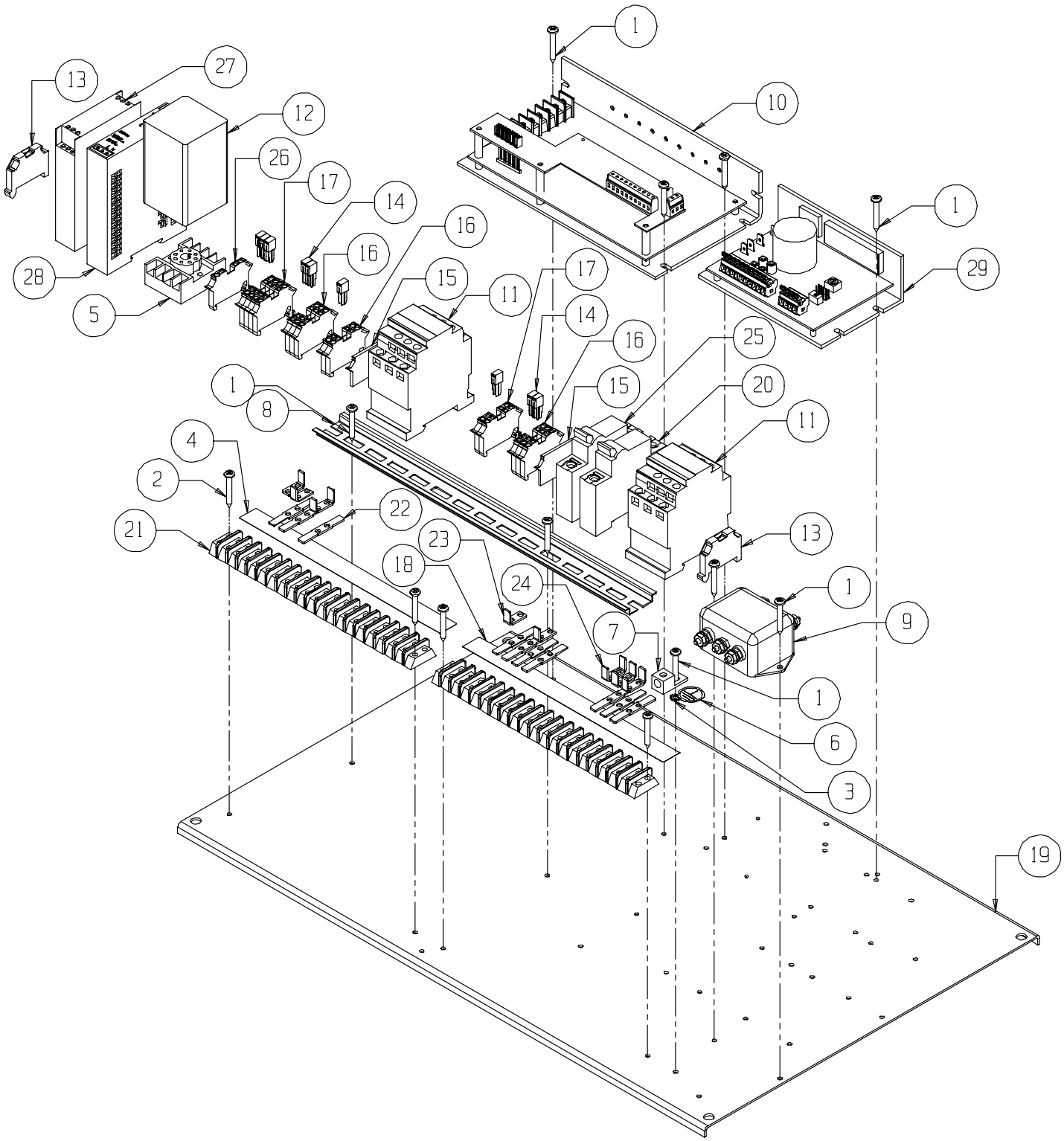
# EXPLODED VIEW: CONTROLS ASSEMBLY



# PARTS LIST: CONTROLS ASSEMBLY

| DIAGRAM NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 5NTD160608 | Thrd Cutting Screw 8-32 x 3/8 "F Type" |
| 2 | 5NTD250800 | Thrd Cutting Screw 1/4-20 x 1/2 "F Type" Hex Hd |
| 3 | 5NT3707826 | Push Button Square Green |
| 4 | 5NTJ167000 | 8-32 Nylon Insert Lock Nut Jam |
| 5 | 5NTR000536 | Lockwasher 1/4" Internal Teeth |
| 6 | 5NT55711 | Control Panel Decal |
| 7 | 5NT3707728 | Door Safety Switch |
| 8 | 5NT55422 | Control Service Panel |
| 9 | (see next page) | Control Panel Sub-Assembly |
| 10 | 5NT3707595 | Hole Plug - 7/8 |
| 11 | 5NT3707563 | Strain Relief - Liquid Tight .27-.46 Wire Dia. |
| 12 | 5NTJ257000 | 1/4-20 Locknut - Jam |
| 13 | 5NT80419 | Potentiometer Assembly - 10K |
| 14 | 5NT55476 | Door Switch Bracket |
| 15 | 5NT3707009 | Strain Relief - Liquid Tight .27-.47 Wire Dia. |
| 16 | 5NT3707029 | Strain Relief - Liquid Tight .19-.30 Wire Dia. |
| 17 | 5NT3707658 | Strain Relief - Liquid Tight .54-.71 Wire Dia. |
| 18 | | Electrical Warning Decal (see page 7 Operators Manual) |
| 19 | 5NT3707093 | Strain Relief - Liquid Tight .55-.71 Wire Dia. |
| 20 | 5NT3707715 | Cord Clamp - Double |
| 21 | 5NT3708819 | 8-32 x .75 Button Head Safety Screw |
| 22 | 5NT3708865 | 8-32 x 1.50 Button Head Safety Screw |
| 23 | 5NT3707342 | Yellow E-Stop Ring |
| 24 | 5NT3707367 | Rocker Switch |
| 25 | 5NT3707429 | Rocker Switch |
| 26 | 5NT3707446 | Potentiometer Knob |
| 27 | 5NT3707564 | Green Pushbutton |
| 28 | 5NT3707565 | Contact Block - Normally Open |
| 29 | 5NT3707566 | Switch Mounting Latch |
| 30 | 5NT3707567 | Red Stop Push/Pull Pushbutton |
| 31 | 5NT3707568 | Contact Block - Normally Closed |
| 32 | 5NT3707647 | Door Safety Coded Magnet |
| 33 | 5NT3707761 | Circuit Breaker - 20 Amp |
| 34 | 5NT3707653 | Circuit Breaker - 4 Amp |
| 35 | 5NT6059021 | Door Safety Switch Assembly - Front |
| 36 | 5NTB251016 | 1/4-20 x 5/8 Button Head Socket Cap Screw |
| 37 | 5NT3708820 | 8-32 x .50 Button Head Safety Screw |
| | 5NT27169 | Traverse Proximity Switch Cord- Right Hand (Not Shown) |
| | 5NT6059078 | Traverse Proximity Switch Cord - Left Hand (Not Shown) |
| | 5NT3707601 | Proximity Sensor |
| | 5NT55717 | Control Panel Cord (Not Shown) |
| | 5NT55491 | Rear Door Safety Switch Cord (Not Shown) |
| | 5NT6059083 | Light Receptacle Cord (Not Shown) |
| | 5NT6329078 | Main Power Cord (Not Shown) |
| | 5NT3708378 | Foam Strip - .25 Thick {Sold by the foot] |

# EXPLODED VIEW: ELECTRIC PANEL SUB ASSEMBLY

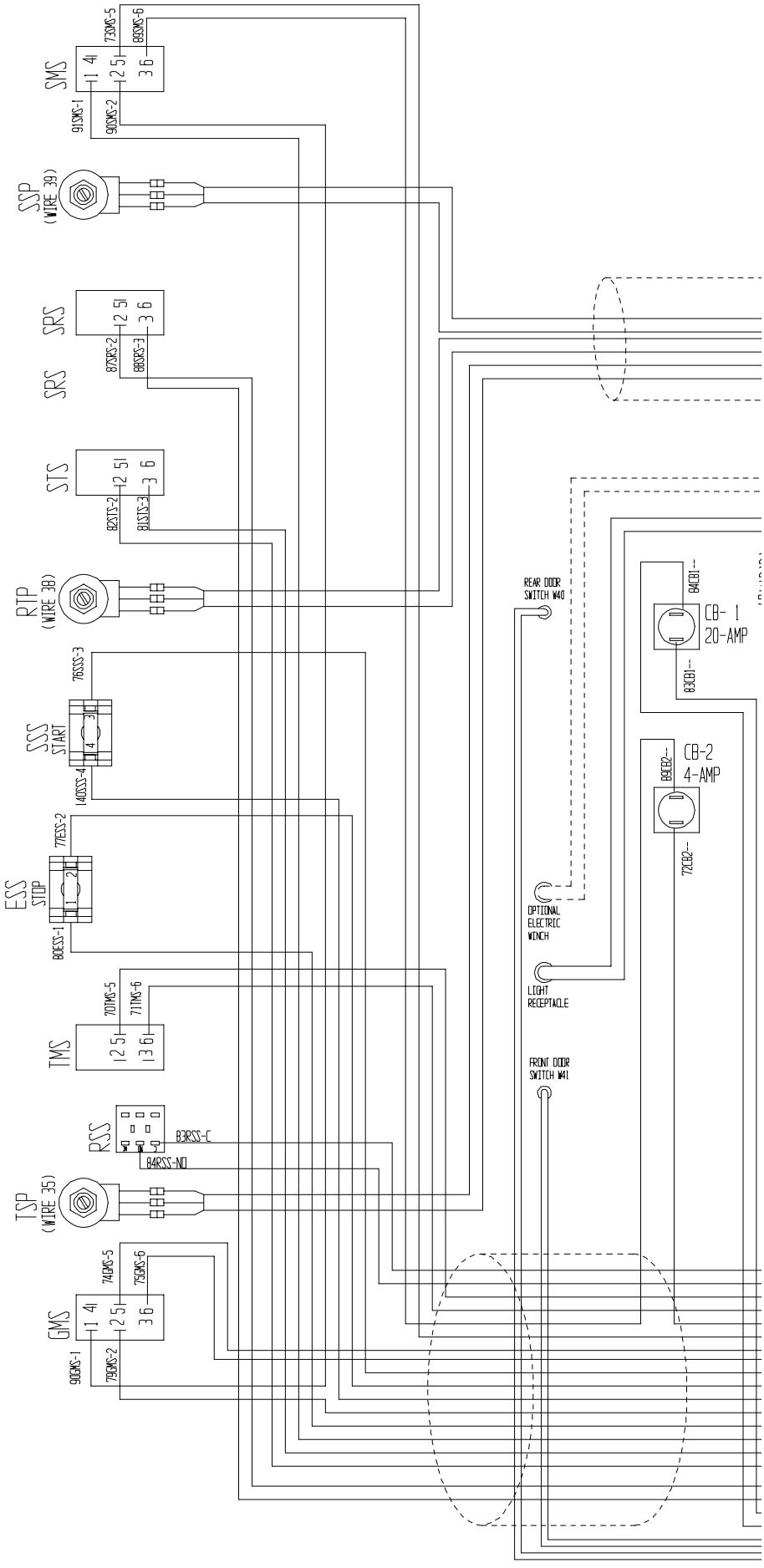


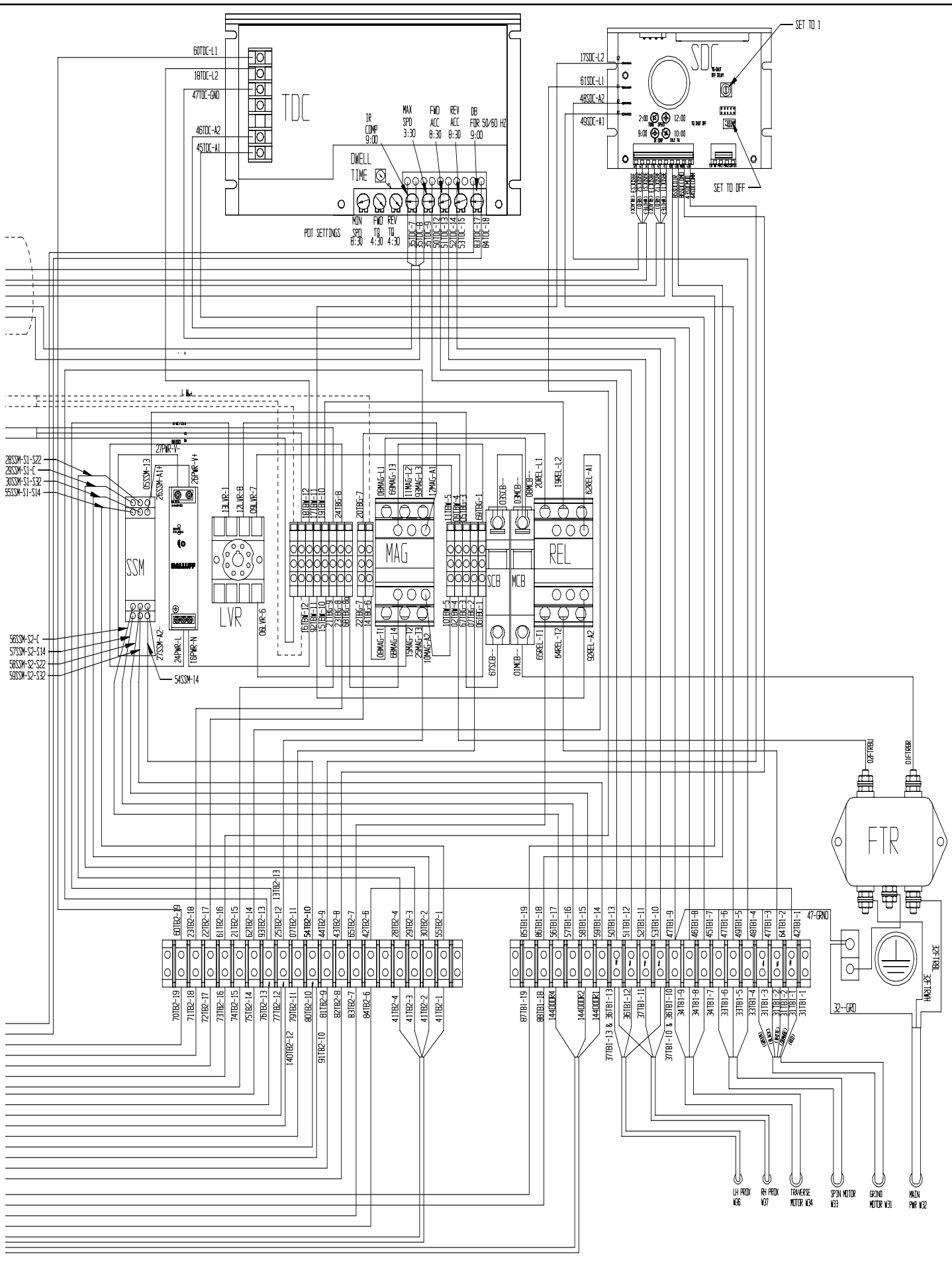
# PARTS LIST: ELECTRIC PANEL SUB ASSEMBLY

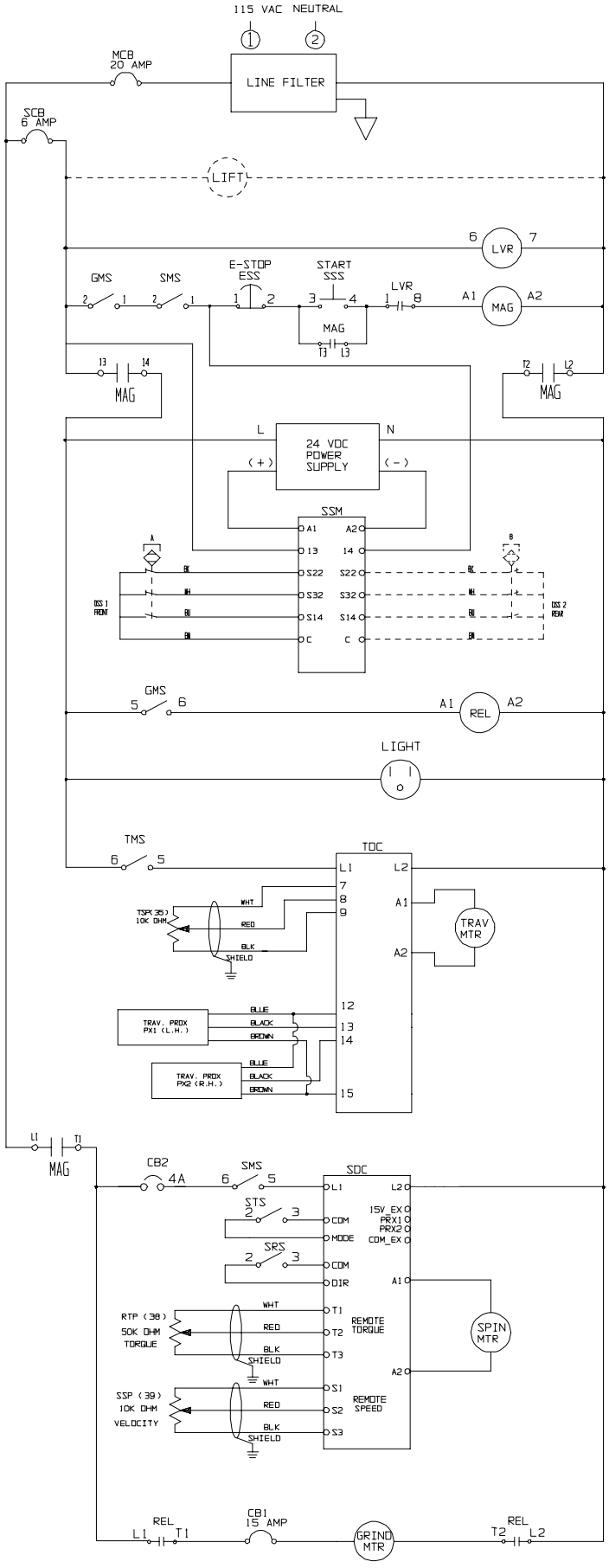
| DIAGRAM NUMBER | PART NUMBER | DESCRIPTION |
|---|---|---|
| 1 | 5NTD160666 | No. 8 x 3/8 Pan Head Self Tapping Screw |
| 2 | 5NTD161266 | No. 8 x 3/4 Pan Head Self Tapping Screw |
| 3 | 5NTR000480 | Lockwasher No. 8 External Teeth |
| 4 | 5NT3706079 | 19 Pole Decal (TB2) |
| 5 | 5NT3707073 | 8 Pin Socket |
| 6 | 5NT3707163 | Primary Ground Decal |
| 7 | 5NT3707164 | Primary Ground Lug |
| 8 | 5NT3707378 | Din Rail - 14" Long |
| 9 | 5NT3707764 | Power Line Filter |
| 10 | 5NT3707850 | Traverse Control Board |
| 11 | 5NT3707556 | Magnetic Starter 1 HP |
| 12 | 5NT3707688 | Voltage Sensor Relay |
| 13 | 5NT3707625 | Terminal Block End Stop |
| 14 | 5NT3707626 | Terminal Block Jumper |
| 15 | 5NT3707627 | Terminal Block End Plate |
| 16 | 5NT3707628 | 2 Conductor Geey Terminal Block |
| 17 | 5NT3707629 | 2 Conductor Blue Terminal Block |
| 18 | 5NT3706078 | 19 Pole Decal (TB1) |
| 19 | 5NT6009270 | Electrical Panel |
| 20 | 5NT80259 | Circuit Breaker - 20 Amp |
| 21 | 5NT3707778 | Terminal Strip - 2 Row 19 Pole |
| 22 | 5NT3707707 | Terminal Strip Double Flat Spade |
| 23 | 5NT3707709 | Terminal Strip Single 90° Spade |
| 24 | 5NT3707708 | Terminal Strip Double 90° Spade |
| 25 | 5NT3707779 | 6-amp Circuit Breaker |
| 26 | 5NT3707624 | Ground Terminal Block |
| 27 | 5NT3707328 | Door Safety Switch Monitor |
| 28 | 5NT3707333 | Power Supply 24 VDC 0.3 Amp |
| 29 | 5NT3707830 | Spin Control Board |
| | 5NT3707224 | Cable Tie Mount (Not Shown) |
| | 5NT3707225 | Cable Tie 6.5" x .18 Wide (Not Shown) |
| | 5NT3707631 | Terminal Block Tag 1-10 (Not Shown) |
| | 5NT3707632 | Terminal Block Tag 11-20 (Not Shown) |

# WIRING DIAGRAM

CB1-CIRCUIT BREAKER 1
CB2-CIRCUIT BREAKER 2
ESS-EMERGENCY STOP SWITCH
FTR-LINE FILTER
GMS-GRINDING MOTOR SWITCH
LVR-LOW VOLTAGE RELAY
MAG-MAGNETIC STARTER
PX1-LEFT PROXIMITY SWITCH
PX2-RIGHT PROXIMITY SWITCH
REL-GRINDING MOTOR RELAY
RTP-RELIEF TORQUE POT
RSS-REVERSE SELECTOR SWITCH
SCB-SECONDARY CIRCUIT BREAKER
SDC-SPIN DRIVE CONTROL
SMS-SPIN MOTOR SWITCH
SRS-SPIN ROTATION SWITCH
SSP-SPIN SPEED POT
SSS-SYSTEM START SWITCH
STS-SPIN/TORQUE SELCTOR SWITCH
TB1-TERMINAL STRIP 1
TB2-TERMINAL STRIP 2
TBG-TERMINAL BLOCK GREY
TBW-TERMINAL BLOCK BLUE
TSP-TRAVERSE SPEED POT
TDC-TRAVERSE DRIVE CONTROL




TDC
SDC
SSM
LVR
MAG
SCB
MCB
REL
FTR
SET TO 1
SET TO OFF
DWELL TIME
IR COMP 9:00
MAX SPD 3:30
FWD ACC 8:30
REV ACC 8:30
DB FOR 50/60 HZ 9:00
POT SETTINGS
MIN SPD 8:30
FWD TQ 4:30
REV TQ 4:30
60TDC-L1
19TDC-L2
47TDC-GND
46TDC-A2
45TDC-A1
17SDC-L2
61SDC-L1
48SDC-A2
49SDC-A1
LH PROX W36
RH PROX W37
TRAVERSE MOTOR W34
SPIN MOTOR W33
GRIND MOTOR W31
MAIN PWR W32
32-GRD
47-GRND




CB1-CIRCUIT BREAKER 1
CB2-CIRCUIT BREAKER 2
DSS1-FRONT DOOR SAFETY SWITCH
DSS2-REAR DOOR SAFETY SWITCH
ESS-EMERGENCY STOP SWITCH
GMS-GRINDING MOTOR SWITCH
LVR-LOW VOLTAGE RELAY
MAG-MAGNETIC STARTER
MSS-MODE SELCTOR SWITCH
PX1-LEFT PROXIMITY SWITCH
PX2-RIGHT PROXIMITY SWITCH
REL-GRINDING MOTOR RELAY
RTP-RELIEF TORQUE POT
SCB-SECONDARY CIRCUIT BREAKER
SDC-SPIN DRIVE CONTROL
SMS-SPIN MOTOR SWITCH
SRS-SPIN ROTATION SWITCH
SSM-SAFETY SWITCH MONITOR
SSP-SPIN SPEED POT
SSS-SYSTEM START SWITCH
STS-SPIN/TORQUE SELCTOR SWITCH
TMS-TRAVERSE MOTOR SWITCH
TSP-TRAVERSE SPEED POT
TDC-TRAVERSE DRIVE CONTROL


FRONTIER
EQUIPMENT™

# MANUEL DE L'OPÉRATEUR

# MEULEUSE DE CYLINDRE DE COUPE
# AFFÛTEUSE / RECTIFIEUSE

## RG5500


FRONTIER EQUIPMENT™

(REV. 5/19/2011)

## LISTE DE VÉRIFICATION DE PRÉPARATION/INSTALLATION

Meuleuse de cylindre de coupe affûteuse/rectifieuse Frontier RG5500

CETTE LISTE DE VÉRIFICATION DOIT RESTER DANS LE MANUEL DU PROPRIÉTAIRE

Il est de la responsabilité du concessionnaire de compléter les procédures énumérées ci-dessous, ensuite réviser cette liste de vérification avec le client à la livraison ou la vente de cet équipement. La formation sur l'installation dépasse les fonctions de base opérationnelle de l'équipement. Pour assurer une formation adéquate, nous demandons que les éléments suivants soient révisés par votre concessionnaire John Deere. Prière de cocher pour vous assurer que vous comprenez les points suivants avant que la formation d'installation soit terminée :

- ☐ 1. L'équipement est complètement assemblé
- ☐ 2. Tous les écrans de protection sont en place et en bon état.
- ☐ 3. Tous les autocollants sont en place et lisibles. (Voir pages)
- ☐ 4. Bon état général (comme la peinture, la soudure, l'électricité)
- ☐ 5. Vérifier qu'il y a suffisamment de puissance électrique pour faire fonctionner la machine.
- ☐ 6. Réviser les manuels de l'opérateur, d'assemblage et d'entretien, et tout autre matériel de formation supplémentaire si disponible.
- ☐ 7. Réviser le bon positionnement du cylindre de coupe
- ☐ 8. Expliquer l'utilisation du mécanisme de rectification de lame
- ☐ 9. Réviser la position de l'interrupteur de proximité de traversée
- ☐ 10. Expliquer l'utilisation de la jauge d'alignement de la meuleuse de cylindres
- ☐ 11. Expliquer la vitesse de rotation de la meuleuse versus la qualité
- ☐ 12. Discuter du tableau d'installation de la meuleuse
- ☐ 13. Réviser l'entretien général

Signature du concessionnaire _____

Signature de l'acheteur _____

# Sécurité

IMPORTANT MESSAGE DE SÉCURITÉ POUR LES PROPRIÉTAIRES/OPÉRATEURS DE MEULEUSE À CYLINDRE DE COUPE

La sécurité est une préoccupation majeure dans la conception, la fabrication, la vente et l'utilisation des meuleuses à cylindre de coupe. En tant que fabricant de meuleuses à cylindre de coupe, nous voulons vous confirmer, à vous, nos clients, notre préoccupation pour la sécurité. Nous voulons également vous rappeler les règles de base, simples, du bon sens de sécurité lors de l'utilisation d'une meuleuse à cylindre de coupe. Le non respect de ces règles peut entraîner des blessures graves ou la mort aux opérateurs ou curieux.

Il est essentiel que toutes personnes impliquées dans l'assemblage, l'opération, le transport, l'entretien et l'entreposage de l'équipement soient conscientes, concernées, prudentes, et bien formées à la sécurité. Toujours utiliser un écran de protection approprié comme spécifié par le fabricant.

Nos machines de série comprennent, comme équipement de série, des gardes ou des écrans de protection pour la meule, de la signalisation de sécurité et un manuel de l'opérateur. Ne jamais contourner ou faire fonctionner la machine avec l'un des gardes ou dispositifs de sécurité enlevés.

**Lisre et bien comprendre toutes les pratiques de sécurité abordées aux pages 4 et 5 de ce manuel. Toutes les règles de sécurité doivent être comprises et respectées par tous ceux qui travaillent avec une meuleuse à cylindre de coupe.**

Avant de faire fonctionner une meuleuse à cylindre de coupe, un opérateur doit lire et comprendre toutes les informations du manuel du propriétaire et les signes de sécurité attachés au produit. Une personne qui n'a pas lu ou compris le manuel du propriétaire et signes de sécurité n'est pas qualifiée pour opérer l'unité. Les accidents se produisent souvent sur les machines qui sont utilisées par quelqu'un qui n'a pas lu le manuel du propriétaire et n'est pas familier avec l'équipement. Si vous n'avez pas un manuel du propriétaire ou les signes de sécurité de série, contacter le fabricant ou votre revendeur immédiatement.

Les meuleuses à cylindre de coupe sont conçues pour un seul opérateur. Ne jamais faire fonctionner la meuleuse avec qui que ce soit proche, ou en contact avec une partie quelconque de la meuleuse. Assurez-vous que personne d'autre, y compris les curieux, ne soient près de vous lorsque vous utilisez ce produit.

Suivre ces simples règles de sécurité de base, ainsi que les autres identifiées dans le manuel du propriétaire et des signes de sécurité du produit, vous permettra de minimiser les risques d'accidents et d'augmenter votre productivité en utilisant ce produit. Soyez prudents et assurez-vous que tous ceux qui opèrent la meuleuse savent et comprennent que ceci est une très puissante pièce de machinerie, et si elle est utilisée incorrectement, des blessures graves ou la mort pourraient en résulter. La responsabilité finale de la sécurité incombe à l'opérateur de cette machine.

**AU CONCESSIONNAIRE :**

L'assemblage et l'installation adéquate de ce produit sont la responsabilité du concessionnaire John Deere. Lire le manuel d'instructions et les règles de sécurité. S'assurer que tous les éléments sur la liste de préparation dans le manuel de l'opérateur soient terminés avant de livrer l'équipement au propriétaire.

**AU PROPRIÉTAIRE :**

Lire ce manuel avant l'utilisation de votre équipement Frontier. Garder ce manuel à portée de main pour référence future. Exiger que tous les opérateurs lisent attentivement ce manuel et se familiarisent avec tous les ajustements et les procédures d'opération avant de faire fonctionner l'équipement. Des manuels de remplacement peuvent être obtenus auprès de votre concessionnaire.

L'équipement que vous avez acheté a été soigneusement conçu et fabriqué pour assurer une utilisation fiable et satisfaisante. Comme tous les produits mécaniques, il nécessitera d'être nettoyé et entretenu. Lubrifier l'unité comme indiqué. Prière de respecter toutes les consignes de sécurité de ce manuel et autocollants de sécurité sur l'équipement.

Pour le service, votre concessionnaire John Deere a des mécaniciens qualifiés, des pièces de service Frontier authentiques, ainsi que les outils et l'équipement nécessaires pour répondre à tous vos besoins de service.

Utiliser uniquement des pièces de service d'origine Frontier.

# CONSIGNES DE SÉCURITÉ

***Les symboles de sensibilisation à la sécurité*** sont insérés dans ce manuel pour vous avertir d'éventuels ***dangers de sécurité***. Lorsque vous voyez ces symboles, suivez leurs instructions.

Le ***Symbole de Mise en garde*** identifie les instructions spéciales ou les procédures qui, si elles ne sont pas respectées, peuvent entraîner des dommages ou la destruction de l'équipement.

Le ***Symbole Attention*** identifie les instructions spéciales ou les procédures qui, si elles ne sont pas respectées, peuvent entraîner des dommages ou la destruction de l'équipement.

1. **GARDER LES GARDES EN PLACE** et en ordre de marche.
2. **RETIRER LES CLÉS ET AUTRES OUTILS.**
3. **GARDER LA ZONE DE TRAVAIL PROPRE.**
4. **NE PAS UTILISER DANS UN ENVIRONNEMENT DANGEUREUX.** Ne pas utiliser la meuleuse dans des endroits humides ou mouillés. La machine est pour une utilisation intérieure seulement. Garder l'aire de travail bien éclairée. well lit.
5. **GARDER À DISTANCE TOUS LES VISITEURS.** Tous les visiteurs doivent être maintenus à une distance sécuritaire de la zone de travail.
6. **RENDRE LA ZONE DE TRAVAIL À L'EPREUVE DES ENFANTS** avec des cadenas ou un interrupteur général.
7. **NE PAS FORCER LA MEULEUSE.** Elle fera le meilleur travail et sera plus sécuritaire si elle est utilisée comme spécifié dans ce manuel.
8. **UTILISER LE BON OUTIL.** Ne pas forcer la meuleuse ou un accessoire pour faire un travail pour lequel elle n'a pas été conçue.
9. **PORTER DES VÊTEMENTS APPROPRIÉS**. Ne pas porter de vêtements amples, gants, cravates, ou des bijoux qui pourraient se coincer dans les pièces mobiles. Le port de chaussures antidérapantes est recommandé. Porter un filet protecteur pour les cheveux longs.
10. **UTILISER TOUJOURS DES LUNETTES DE SÉCURITÉ.**
11. **FIXER SOLIDEMENT VOTRE TRAVAIL.** Assurez-vous que l'unité de coupe est bien fixée avec les pinces fournies avant l'utilisation.
12. **NE PAS TROP TENDRE LES BRAS.** Maintenir un bon équilibre en tout temps.
13. **ENTRENTENIR LA MEULEUSE AVEC SOIN.** Suivre les instructions du manuel d'entretien pour la lubrification et l'entretien préventif.
14. **DÉBRANCHER L'ALIMENTATION ÉLECTRIQUE AVANT L'ENTRETIEN,** ou lors du changement de la meule.
15. **RÉDUIRE LE RISQUE DE DÉMARRAGE INVOLONTAIRE.** S'assurer que tous les interrupteurs soient à la position **ARRÊT** avant de brancher la meuleuse.
16. **UTILISER LES ACCESSOIRES RECOMMANDÉS**. Consulter le manuel pour les accessoires recommandés. L'utilisation d'accessoires inadéquats peut provoquer des risques de blessures.
17. **VÉRIFIER LES PIÈCES ENDOMMAGÉES.**Un garde ou toute autre pièce qui est endommagé ou ne remplit pas sa fonction prévue devrait être correctement réparé ou remplacé.
18. **CONNAITRE VOTRE ÉQUIPEMENT.** Lire attentivement ce manuel. Apprendre son application et limites ainsi que certains risques potentiels.
19. **GARDER TOUS LES AUTOCOLLANTS DE SÉCURITÉ PROPRES ET LISIBLES.** Si les autocollants de sécurité deviennent endommagés ou illisibles pour une raison quelconque, les remplacer immédiatement. Faire référence aux illustrations des pièces de rechange du manuel d'entretien pour la location et les numéros de pièces des autocollants de sécurité.
20. **NE PAS OPÉRER LA MEULEUSE LORSQUE SOUS L'INFLUENCE DE DROGUES, D'ALCOOL OU DE MÉDICAMENTS.**

# CONSIGNES DE SÉCURITÉ

UNE MAUVAISE UTILISATION DE LA MEULE PEUT CAUSER DES SÉRIEUX BRIS ET DES BLESSURES GRAVES.

L'affûtage est une opération sans danger si les quelques règles élémentaires ci-dessous sont respectées. Ces règles sont basées sur les matières contenues dans le Code de sécurité ANSI B7.1 pour « l'utilisation, les soins et la protection des meules ». Pour votre sécurité, nous vous suggérons de profiter de l'expérience des autres et de respecter ces règles.

## FAIRE

1. **CONSERVER ET ENTREPOSER** toujours les meules de manière sécuritaire.
2. **INSPECTER VISUELLEMENT** toutes les meules pour des dommages possibles avant de les monter.
3. **VÉRIFIER LA VITESSE DE LA MACHINE** contre la vitesse maximale de fonctionnement sécuritaire établie indiquée sur la meule.
4. **VÉRIFIER LES BRIDES DE FIXATION** pour un diamètre égal et approprié.
5. **UTILISER LES BUVARDS DE MONTAGE** lorsqu'ils sont fournis avec les meules.
6. **S'ASSURER** que la **RÉGLETTE** est adéquatement ajustée.
7. **UTILISER** toujours **UN GARDE DE SÉCURITÉ COUVRANT** au moins la moitié de la meule.
8. **PERMETTRE** AUX MEULES **NOUVELLEMENT MONTÉES** de rouler à la vitesse de fonctionnement, avec un garde en place, pour au moins une minute avant le meulage.
9. **PORTER** toujours **DES LUNETTES DE SÉCURITÉ** ou un certain type de protection oculaire lors du meulage.

## NE PAS FAIRE

1. **NE PAS** utiliser une meule fissurée ou celle qui **A ÉTÉ ÉCHAPPÉE** ou qui est endommagée.
2. **NE PAS FORCER** une meule sur la machine **OU MODIFIER** la taille du trou de fixation - si la meule ne s'adapte pas à la machine, aller en chercher une qui s'adaptera.
3. **NE** jamais **DÉPASSER LA VITESSE D'OPÉRATION** établie pour la meule.
4. **NE PAS** utiliser des brides de fixation sur lesquelles les surfaces des paliers **NE SONT PAS PROPRES, PLATES ET SANS BAVURES.**
5. **NE PAS SERRER** EXCESSIVEMENT **l'écrou de fixation.**
6. **NE PAS** meuler sur le **CÔTÉ DE LA MEULE** (voir le code de sécurité B7,2 pour les exceptions).
7. **NE PAS** démarrer la machine jusqu'à ce que le **CARTER DE MEULE SOIT EN PLACE.**
8. **NE PAS BLOQUER** le travail sur la meule.
9. **NE PAS SE TENIR DIRECTEMENT DEVANT** une meule n'importe quand la meuleuse est démarrée.
10. **NE PAS FORCER LE MEULAGE** de sorte que le moteur ralentisse notablement ou que le travail devienne chaud.

ÉVITER L'INHALATION DE LA POUSSIÈRE générée par les opérations de meulage et de découpage. L'exposition à la poussière peut causer des troubles respiratoires. Utiliser des respirateurs approuvés par NIOSH ou MSHA, des lunettes de sécurité ou des écrans faciaux et des vêtements de protection. Prévoir une ventilation suffisante pour éliminer les poussières, ou pour maintenir le niveau de poussière en dessous de la valeur limite pour les poussières nuisibles telles que classées par l'OSHA.

# TABLE DES MATIÈRES

**Cette machine est destinée à l'affûtage des cylindres de coupe pour les tondeuse de type hélicoïdal <u>SEULEMENT.</u> Toute utilisation autre que cela peut causer des blessures et annuler la garantie.**

**Pour assurer la qualité et la sécurité de votre machine et pour maintenir la garantie, vous DEVEZ utiliser des pièces de rechange d'origine fabriquées pour l'équipement et faire faire les travaux de réparation par un professionnel qualifié.**

**TOUS les opérateurs de cet équipement doivent être adéquatement formés AVANT de faire fonctionner l'équipement.**

**Ne pas utiliser d'air comprimé pour nettoyer la poussière de meulage de la machine. Cette poussière peut causer des blessures ainsi qu e des dommages à la meuleuse. La machine est pour une utilisation intérieure seulement. Ne pas utiliser une laveuse à pression pour nettoyer la machine.**


### Relais de basse tension

La meuleuse est équipée d'un relais de haute-basse tension qui est réglé en usine à 100-140 VAC. Si la ligne d'alimentation ne délivre pas de 100-140 VAC de tension sous charge, le relais s'ouvrira et déconnectera le démarreur. Si cela se produit, votre ligne d'alimentation est incorrecte et doit être correcte avant de poursuivre avec la meuleuse.

## TABLE DES MATIÈRES



## ENTRETIEN QUOTIDIEN PAR L'OPERATEUR

Sur une base quotidienne, nettoyer la machine en l'essuyant.
Sur une base quotidienne, enlever tous les grains de meulage de la zone de l'arbre de meulage, des arbres de traversée, et la barre d'outillage.
Sur une base quotidienne, inspecter la machine pour des attaches ou des composants désserés.
Contacter le département d'entretien de votre entreprise si des pièces endommagées ou défectueuses sont constatées.

**NE PAS UTILISER D'AIR COMPRIMÉ POUR NETTOYER LA POUSSIÈRE DE MEULAGE DE LA MACHINE.**

# CONSIGNES DE SÉCURITÉ

**PRIÈRE DE PORTER UNE ATTENTION PARTICULIÈRE AUX AUTOCOLLANTS DE MISE EN GARDE SUIVANTS QUI SONT SITUÉ SUR LA MEULEUSE. VOIR LE MANUEL DE SERVICE POUR LES NUMÉROS DE PIÈCES DE RECHANGE.**

**T/M DE LA MEULE**

**⚠ CAUTION** **⚠ ATTENTION**

**To Avoid Injury:**
-Do not exceed grinding wheel maximum operating speed of 3600 revolutions per minute.

**Pour éviter des blessures :**
-Ne dépassez pas la vitesse de fonctionnement maximale de la roue de meulage de 3600 révolutions minute.

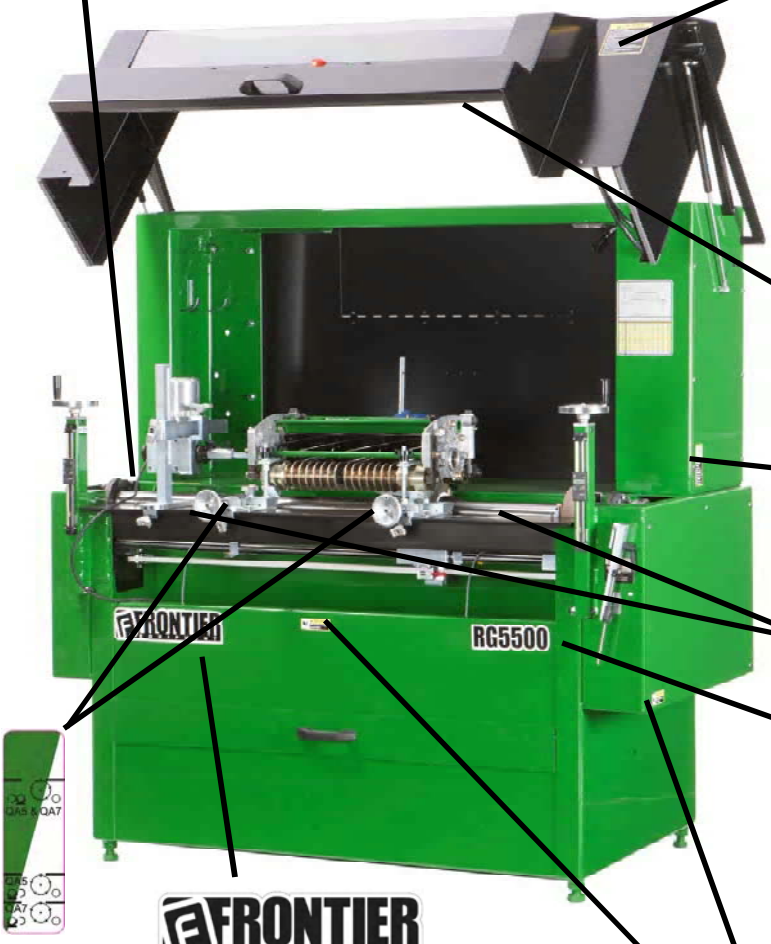
**INFORMATIONS D'ORDRE GÉNÉRAL**

**⚠ CAUTION**

**To Avoid Injury:**
-Read Operator's Manual before operating, servicing, or repairing equipment. Follow all safety rules and instructions. (Manuals are available from your selling dealer.)
-Keep bystanders away from equipment during operation. Keep all shields in place and in good condition.
-Wear all of the appropriate safety equipment specified in the Operator's Manual while operating this machine.
-Always make sure machine is off and all machine movement has stopped before leaving machine.
-Never allow children or untrained persons to operate equipment.

**⚠ ATTENTION**

**Pour éviter des blessures :**
-Lisez le manuel de l'opérateur avant d'utiliser, d'entretenir, ou de réparer l'équipement. Suivez toutes les règles et consignes de sécurité. (Les manuels sont disponibles auprès de votre concessionnaire.)
-Ne laissez personne s'approcher de l'équipement pendant son fonctionnement. Gardez tous les écrans de protection en place et en bon état.
-Portez tout l'équipement de sécurité approprié spécifié dans le manuel de l'opérateur pendant le fonctionnement de cette machine.
-Assurez vous toujours que la machine soit hors tension et que tous les mouvements de la machine se soient arrêtés avant de quitter la machine.
-Ne laissez jamais des enfants ou des personnes non qualifiées opérer l'équipement.




**ÉLECTRICITÉ**

**⚠ CAUTION**

**To Avoid Injury:**
-Make sure all electrical power to this machine has been disconnected before removing any electrical panels or covers for maintenance.

**⚠ ATTENTION**

**Pour éviter des blessures :**
-Assurez-vous que l'alimentation électrique de cette machine ait été coupée avant de retirer les panneaux ou couvercles électriques pour l'entretien.

**RG5500**



FRONTIER EQUIPMENT

**OBJETS TRANCHANTS**

**⚠CAUTION**

**To Avoid Injury:**
-Keep hands away from rotating objects

**⚠ATTENTION**

**Para evitar lesiones:**
-Mantenga las manos alejadas de los objetos giratorios

# APPRENDRE À CONNAÎTRE VOTRE MEULEUSE


## SPÉCIFICATIONS

| | |
|---|---|
| Interrupteurs de déplacement | Interrupteurs de proximité sans contact à semi-conducteurs. |
| Largeur hors tout | 71 po [181 cm] |
| Hauteur hors tout | 69 po [175 cm] avec la porte fermée, 87 po [221 cm] avec la porte ouverte |
| Profondeur hors tout | 42 po [107 cm], sans poste de travail, 79 po [201 cm] avec la station de travail optionnelle |
| Poids | 1450 lbs. [658 kg] 1650 lbs poids à l'expédition [748 kg] |
| Construction de la base | Base en acier soudée renforcée à usage industriel de précision |
| Rails du traînard | Acier trempé de précision - 1,000 Dia. [25,4 mm] |
| Moteur de tête d'affûtage | Moteur de 1HP à courant alternatif, 3450 T/M |
| Moteur de rotation | Moteur de ,20 HP à courant continu de vitesse variable refroidi par ventilateur |
| Niveau sonore | Plus de 75 dBA, moins de 95 dBA |
| traversée automatique | Système de serrage à entraînement par courroie facile à engager |
| Système de contrôle | * Interrupteurs d'arrêt de sécurité du moteur et de la porte de l'entraînement de rotation<br>* Entraînement de rotation réversible pour vitesse de rotation variable ou fonctions de rectification du couple de serrage variable<br>* Commande de traversée à vitesse variable. |
| Options : | * Treuil manuel et ensemble de flèche, treuil électrique et ensemble de flèche ou plateforme élévatrice. |

# APPRENDRE À CONNAÎTRE VOTRE MEULEUSE (Suite)

**IDENTIFICATION DES COMPOSANTS DU PANNEAU DE COMMANDES**

Examiner les descriptions suivantes des composants du panneau de contrôle avant de procéder avec les instructions

## BOUTON-POUSSOIR DE DÉMARRAGE DU SYSTÈME

Le bouton-poussoir vert est l'interrupteur de démarrage du système. Appuyer dessus engagera le démarreur magnétique et mettra en marche le panneau de commande. Le démarreur magnétique ne s'enclenchera pas à moins que le bouton-poussoir d'arrêt d'urgence ait été tiré et que l'interrupteur du moteur de meulage et l'interrupteur du moteur de rotation ne soient éteints.

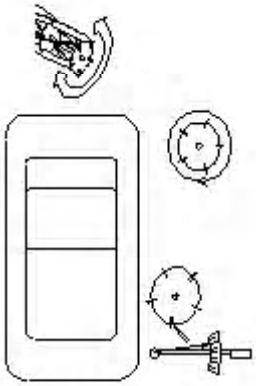

## INTERRUPTEUR DE SELECTION DE MEULAGE

**Vitesse de rotation variable**

L'interrupteur doit être vers le haut pour effectuer des opérations d'affûtage rotatif.

**Rectification de couple de serrage variable**

L'interrupteur doit être vers le bas pour effectuer des opérations de meulage de rectification.

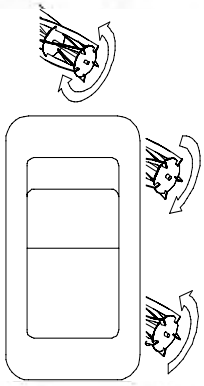


## INTERRUPTEUR D'ENTRAÎNEMENT DE ROTATION

**Avant / Arrêt / Renverse**

Cet interrupteur inverse la direction du moteur d'entraînement de rotation.

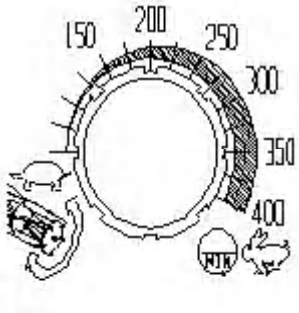
IMPORTANT : Parce que le moteur d'entraînement de rotation peut être basculé sur le bras de réglage horizontal, la direction pourrait être l'inverse de ce qui est indiqué sur l'autocollant.



## CADRAN DU POTENTIOMÈTRE DE VITESSE DE ROTATION T/M

Régler la vitesse de rotation du cylindre lorsque vous avez l'interrupteur sélecteur d'affûtage à une vitesse de rotation variable.

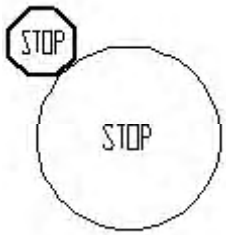
**LA PORTE DE GARDE DOIT ETRE FERMÉE POUR QUE L'ENTRAINEMENT DE ROTATION FONCTIONNE.**



# APPRENDRE À CONNAÎTRE VOTRE MEULEUSE (Suite)

**BOUTON D'ARRÊT D'URGENCE POUSSER-TIRER**

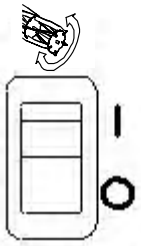
Pousser pour couper toute l'alimentation électrique aux fonctions du panneau de commande. Ceci coupe l'alimentation électrique de tous les moteurs, y compris le moteur de meulage, moteur de traversée, moteur de rotation, etc Pour restaurer l'alimentation électrique, tirer sur le bouton et appuyer sur le bouton Démarrer.




**INTERRUPTEUR DU MOTEUR DE ROTATION Marche / Arrêt**

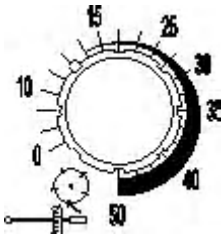
Allume et ferme le moteur de rotation.

**LA PORTE DE GARDE DOIT ETRE FERMÉE POUR QUE LE MOTEUR D'AFFÛTAGE FONCTIONNE.**



**CADRAN DE COUPLE DE RECTIFICATION**

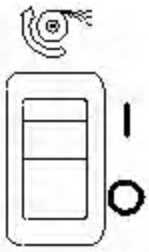
Permet de régler le couple du moteur d'entrainement de la rotation (le couple qui maintien le cylindre de coupe au doigt de rectification) lorsque l'interrupteur de sélection d'affûtage est positionné à couple de serrage variable.




**INTERRUPTEUR DU MOTEUR DE LA MEULE Marche / Arrêt**

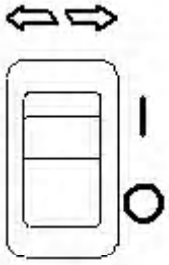
Allume et ferme le moteur de la meule.

**LA PORTE DE GARDE DOIT ETRE FERMÉE POUR QUE LE MOTEUR D'AFFÛTAGE FONCTIONNE.**



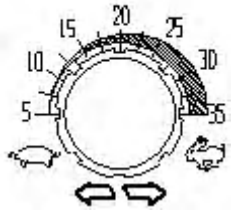
**INTERRUPTEUR DU MOTEUR DE TRAVERSÉE**

Positionne le moteur d'entraînement de la travers à MARCHE/ARRÊT.



**CADRAN DU POTENTIOMÈTRE DE LA VITESSE DE LA TRAVERSÉE - PD / MIN**

Permet de régler la vitesse du mouvement de gauche et droite de la meule.




**INTERRUPTEUR DE RENVERSE DE TRAVERSÉE**

Inverse la direction de la meulette si on la pousse lorsque la tête est en mouvement.

# APPRENDRE À CONNAÎTRE VOTRE MEULEUSE (Suite)

## MONTAGE AVANT ET ARRIÈRE DE LA TONDEUSE

L'unité de coupe doit être placée dans la machine avec le rouleau arrière sur la table et le rouleau avant retenu à l'outillage avant. L'outillage avant peut être déplacé latéralement le long de la barre d'outils afin qu'il puisse être placé aussi loin que nécessaire pour s'adapter à toutes les largeurs de cylindres.
Les autocollants sur la barre d'outils facilitent la position de l'outillage en fonction de la largeur du cylindre. Pour déplacer l'outillage, desserrer le bouton situé à l'avant de la base de l'outillage et faire glisser le long de la barre d'outils. L'outillage doit être situé aussi près du cadre que possible laissant le maximum d'espace pour utiliser la jauge de position (la jauge sera discutée dans la section sur l'alignement). La position horizontale est atteinte en utilisant le volant situé à l'avant de l'outillage. Si vous affûtez une unité de coupe à réglage rapide (QA7 ou QA5), utiliser les autocollants situés sur l'outillage afin de positionner rapidement le cylindre. Il y a deux positions pour chaque cylindre dépendant de la façon dont le rouleau avant est monté. Voir la figure 2.

Si vous utilisez les supports toutes positions, la position verticale et horizontale peuvent être ajustées en desserrant le bouton situé sur le côté de l'outillage et le déplaçant à un nouveau jeu de broches.

Vérifier que le cylindre soit bien placé pour la roue d'affûtage et la roue de rectification en vérifiant les limites de déplacement, les deux roues auront besoin de dégagement pour pouvoir se détacher du cylindre sur les deux côtés. La vérification lors de l'installation éliminera la nécessité d'ajustements majeurs et les alignementslors du passage d'affûtage à rectification. Lorsque la tondeuse est en place, la verrouiller en position en resserant tous les boutons. Soulever le rouleau arrière sur le support angulaire et serrer le rouleau fermement en pressant la poignée de la pince.

## POSITION DU CYLINDRE

Le cylindre doit être placé de manière à être à une heure ou une position angulaire de 30 ° par rapport à la meule. Voir la figure 3. Si les supports toutes positions sont utilisés essayer de positionner l'unité afin que le fond du cylindre soit entre 1,50 à 2,00 po [38-51 MM] en dehors de la table. Lorsque de l'utilisation de l'outillage de style montage de rouleau essayer de maintenir la position d'une heure et vérifier le dégagement entre le cylindre et la meule. Vérifier que l'angle de dépouille appropriée puisse être obtenue avec ce paramètre et faites les ajustements si nécessaire.

Si vous affûtez un cylindre QA7 ou QA5 en utilisant le montage de style rouleau, utiliser les autocollants situés sur l'outillage afin d'obtenir la position optimale pour affûter le cylindre. Voir la figure 2.

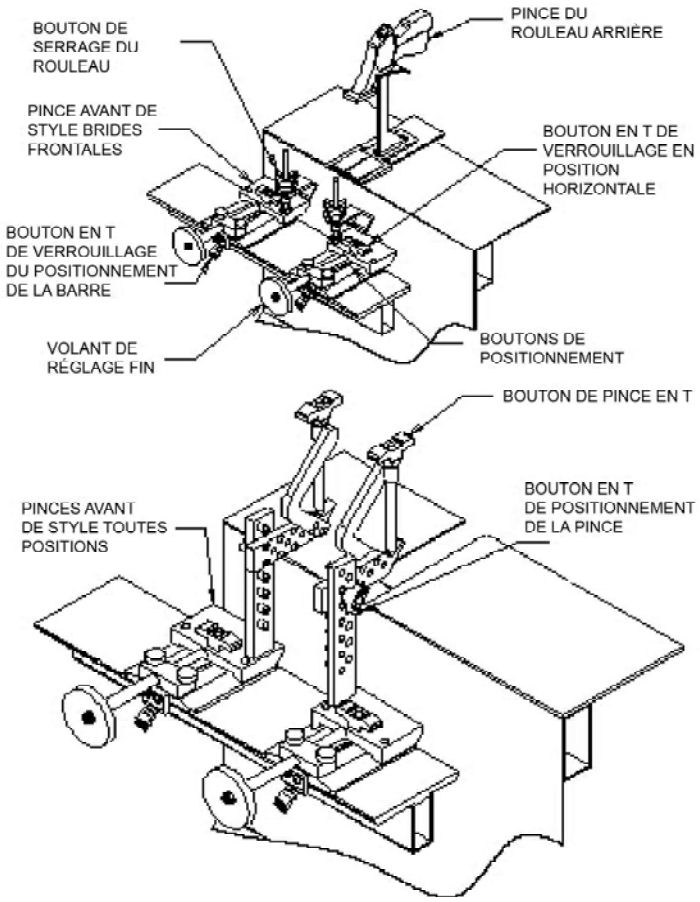



Figure 1

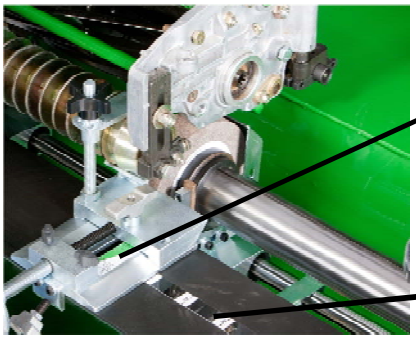



Figure 2

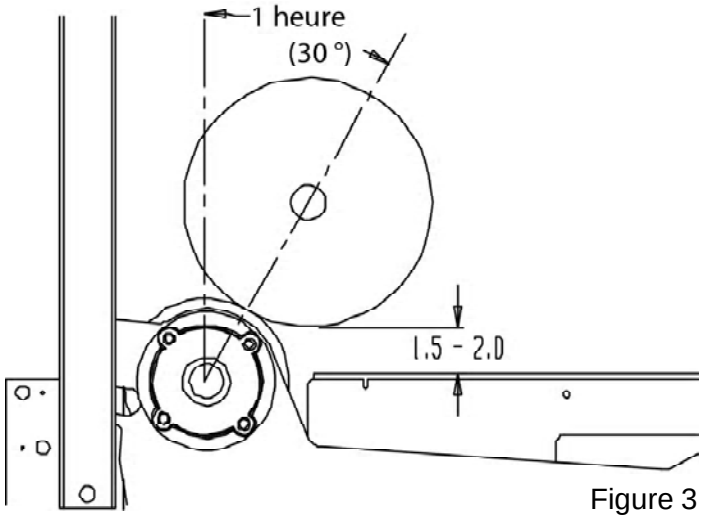



Figure 3

## ENGAGEMENT ET DÉGAGEMENT DE LA TRAVERSÉE

La courroie qui entraîne les moyeux de rectification et d'affûtage de droite et de gauche peuvent être engagés ou dégagés en retournant la pince située dans le fond des assemblages de meulette. Le déplacement du levier vers la gauche, engagera la courroie et en le déplaçant vers la droite dégagera la courroie. La pointe peut être ajustée si nécessaire pour augmenter ou diminuer la tension de la courroie. Voir ajustements dans le manuel de service pour plus de détails.

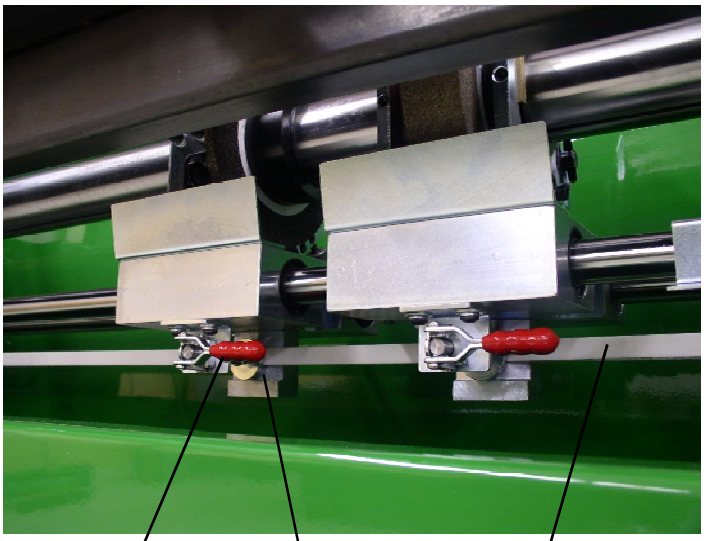



Figure 4

**LA POINTE DE LA PINCE DE COURROIE EST AJUSTÉE À L'USINE POUR PERMETTRE À LA COURROIE DE GLISSER SI LE MOYEU VIENT EN CONTACT AVEC QUELQUE CHOSE. IL FAUT ÊTRE PRUDENT LORS DE L'AJUSTEMENT DE LA POINTE. SI LA PINCE EST TROP SERRÉE, LA COURROIE NE GLISSERA PAS CE QUI POURRAIT CAUSER DES DOMMAGES À LA MACHINE OU AU CYLINDRE.**

## INTERRUPTEURS DE PROXIMITÉ DE TRAVERSÉE

Deux interrupteurs de proximité mobiles déterminent les limites gauche et droite de l'assemblage de la meulette. Un voyant DEL s'allume sur l'interrupteur lorsque la meulette se rapproche de la tête du détecteur de proximité. Les capteurs sont montés dans les supports de proximité situés sur les arbres de traversée. Les supports peuvent facilement être glissés le long des arbres pour un ajustement rapide et facile aux réglages de déplacement. En passant du mode d'affûtage au mode rectification, les supports devront être levés des arbres et remis sur les arbres dans la bonne position.

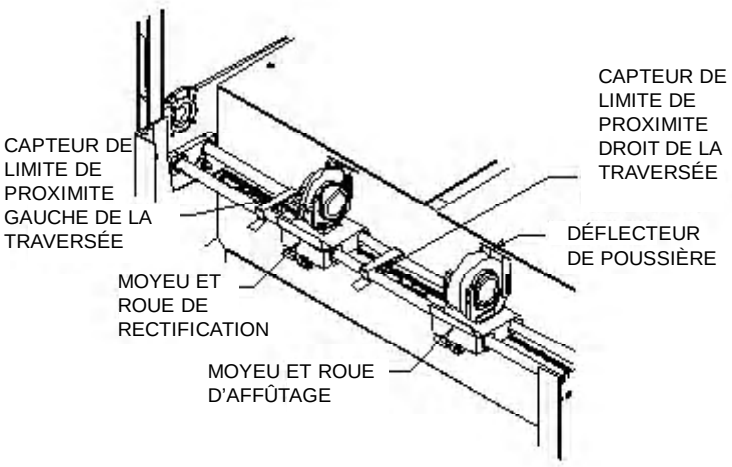



Figure 5

## MEULETTE D'AFFÛTAGE/RECTIFIEUSE

Cette meuleuse est équipée de meule d'affûtage et de rectification séparées. Lorsque l'installation est faite correctement le cylindre aura seulement besoin d'être placé et aligné une seule fois pour les deux cycles. La roue d'affûtage est située sur le côté droit de la machine et est plus large que la roue de rectification. Déplacer la roue qui n'est pas utilisée le plus loin possible de ce côté pour donner le maximum d'espace pour régler et faire fonctionner la machine. Les capteurs de proximité doivent être déplacés afin que la roue en cours d'utilisation se situe entre les deux capteurs. S'assurer que la roue qui n'est pas en cours d'utilisation ne soit pas engagée à la courroie d'entraînement.

# APPRENDRE À CONNAÎTRE VOTRE MEULEUSE (Suite)

**AJUSTEMENT DE L'ANGLE DE DÉPOUILLE**

La rotation du système de doigt autour de la meule changera l'angle de dépouille. En desserrant la grande poignée à cliquet, le système de doigt peut être tourné pour atteindre les angles d'usine, ou quel que soit l'angle que vous sélectionnez. Voir figure 6. En tournant le doigt en avant, l'angle de dépouille diminuera et le tournant vers l'arrière l'angle de dépouille augmentera. Resserrer la poignée à cliquet lorsque le réglage est correct.

**AJUSTEMENT DU DIAMÈTRE DE LA ROUE DE RECTIFICATION**

Comme la roue s'use, le système de doigt devra être ajusté pour maintenir le bon écart entre le doigt fixe et la roue. Pour déplacer le système de doigt desserrer la petite poignée à cliquet. Voir la figure 6. L'écart entre le doigt fixe et la meule doit être entre ,06 po [1,5 mm] et ,18 po [4,6 mm] en fonction du montant de rectification existante sur le cylindre. Resserrer la poignée à cliquet après que l'ajustement ait été effectué.

**AJUSTEMENTS DU DOIGT D'INDEXAGE**

L'assemblage de rectification comprend deux doigts. Voir la figure 6. Le doigt fixe de rectification maintient la lame en position pendant le processus de meulage de rectification. Le doigt d'index mobile se déplace du côté du doigt de rectification (face arrière) de la lame du cylindre lors de la traversée de droite à gauche, du côté de la meule (face avant) de la lame du cylindre lors de la traversée de gauche à droite. Le doigt d'indexage permet à la meule d'indexer à la lame suivante automatiquement lors du meulage de rectification. L'ajustement incorrect de l'assemblage du doigt de rectification peut entraîner un mauvais meulage ou possiblement endommager le cylindre ou la machine.

Le bouton du doigt d'indexage ajuste où le doigt d'indexage s'arrête lorsque les lames du cylindre indexent. Voir la figure 6. Une bonne position de cet arrêt est essentielle pour permettre aux lames du cylindre de transiter doucement du doigt d'indexage au doigt fixe.

IMPORTANT ! Après avoir ajusté la position du bouton du doigt d'indexage d'arrêt, il devrait y avoir 1/32 po [0,8 mm] de dégagement entre le doigt d'index et la lame du cylindre lorsque vous appuyez sur le doigt d'indexage. Cela permettra au doigt fixe de rectification de guider la lame du cylindre pendant le cycle de rectification. La lame du cylindre ne devrait jamais chevaucher le doigt d'indexage lors du meulage.

La broche d'arrêt de l'index est de hauteur réglable. Elle doit être ajustée pour attraper la lame du cylindre et toujours laisser suffisamment de dégagement à l'étoile de roue après que la rectification ait été meulée à la profondeur requise.

Il y a une position d'arrêt avancée sur le système de doigt située à proximité du point pivot du doigt d'indexage. Celle-ci aura besoin d'être ajustée seulement s'il y a un problème de dégagement avec le doigt d'index quand il se déplace vers l'avant. Voir la figure 7.

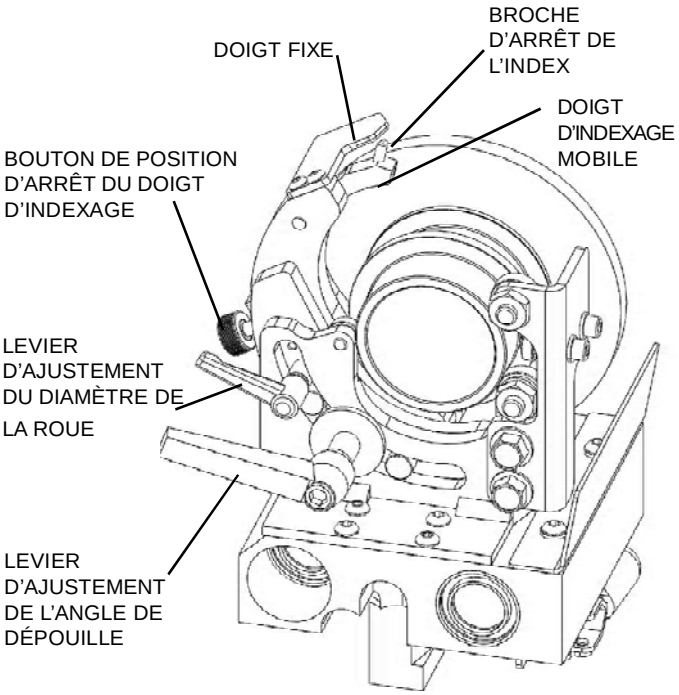



Figure 6

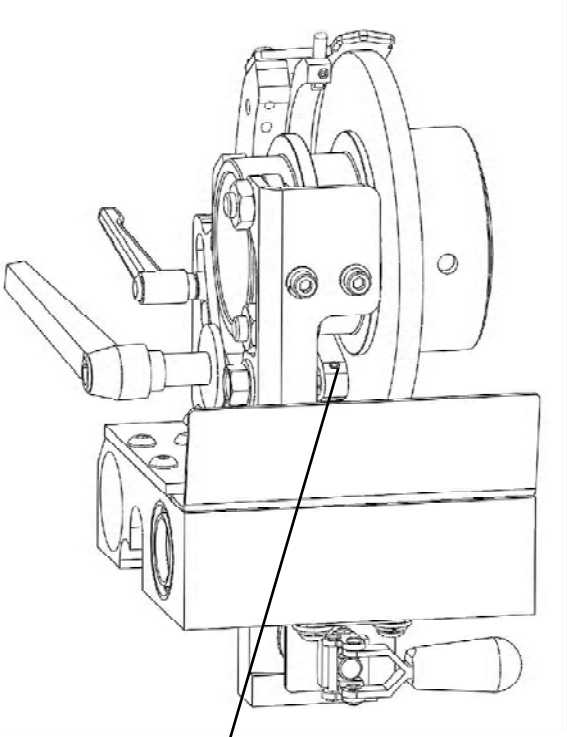



Figure 7

# APPRENDRE À CONNAÎTRE VOTRE MEULEUSE (Suite)

**JAUGE D'ALIGNEMENT**

Un cylindre correctement rectifié doit être de forme cylindrique. Toute conicité doit être rectifiée. Afin d'assurer la bonne rectification du cylindre, il **DOIT** être aligné avec précision avant le meulage. La jauge d'alignement numérique est utilisée pour un alignement précis du cylindre. La jauge est utilisée pour définir l'alignement horizontal et la vérification la conicité dans les limites des milliers d'un pouce. La jauge numérique vous permet de mesurer l'une des extrémités du cylindre en étendant la glissière jusqu'à ce que vous rentiez en contact avec l'arbre central du cylindre. Voir la figure 8. En mesurant à l'extrême gauche et l'extrême droite sur l'arbre central, vous pouvez régler l'alignement horizontal en utilisant les boutons de réglage d'outillage avant jusqu'à ce que l'alignement soit dans les limites de 0,005 pouces [0,13 mm].

Lorsque complété, vous pouvez alors régler la jauge à zéro sur l'arbre central, retirer la jauge coulissante et mesurer la surface extérieure d'une lame du cylindre. En comparant les lectures du côté gauche du cylindre au côté droit du cylindre, vous pouvez déterminer exactement combien de conicité vous avez dans le cylindre. La compensation pour la conicité sera expliquée plus loin dans la procédure de meulage.

REMARQUES : La jauge peut être réglée à la fois pour lecture des mesures impériales et métriques.

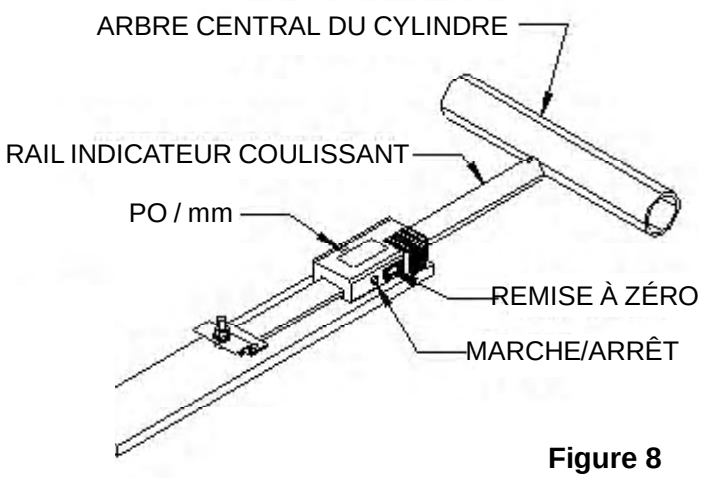



**Figure 8**

## PRÉPARER L'UNITÉ DE TONTE POUR L'AFFÛTAGE

Toujours suivre les procédures décrites dans le manuel de l'unité de coupe lors de la préparation de l'unité pour l'affûtage. Il est recommandé que le cylindre à affûter soit soigneusement nettoyé. Retirer les roues et la lame fixe du cylindre si possible. **Les contre-lames doivent être affûtées lorsque le cylindre est affûté.** Inspecter, régler et/ou remplacer les roulements usés ou endommagés. Assurez-vous que les roulements du cylindre sont en bon état de fonctionnement et ajustés correctement pour que le cylindre tourne facilement à la main.

Parce que cette meuleuse monte le cylindre à l'aide du rouleau arrière et rouleau avant du cylindre le cas échéant, les roulements des rouleaux doivent être en bon état et sans jeu. **Les rouleaux avant et arrière doivent être correctement alignés parallèles au cylindre avant l'affutage.**

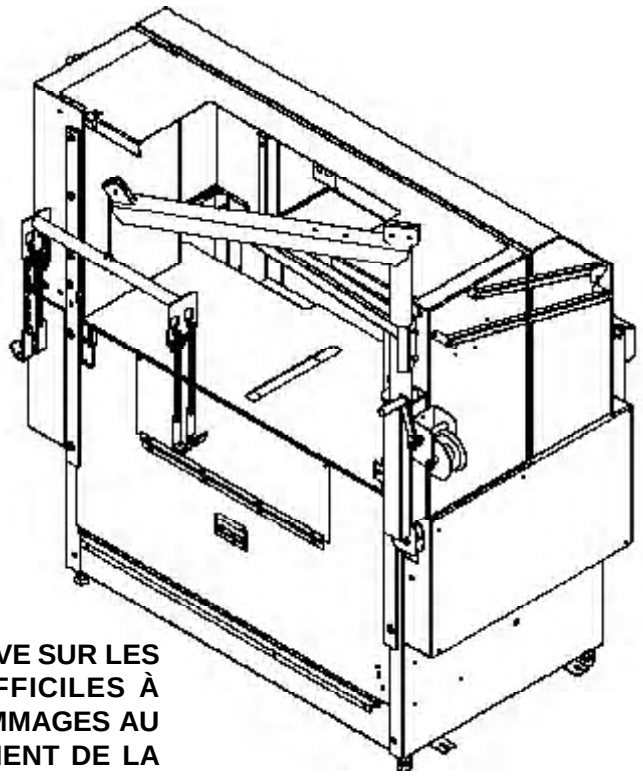


**Figure 9**

**! LES CYLINDRES AVEC UNE TENSION EXCESSIVE SUR LES ROULEMENTS SERONT EXTRÊMEMENT DIFFICILES À AFFÛTER ET PEUVENT PROVOQUER DES DOMMAGES AU CYLINDRE OU AU MECANISME D'ENTRAINEMENT DE LA ROTATION SUR LA MEULEUSE. PAS PLUS DE 25. PO. CHARGE DE PIVOTEMENT MAXIMALE LBS POUR FAIRE TOURNER LE CYLINDRE N'EST PERMIS OU DES DOMMAGES AU MOTEUR D'ENTRAINEMENT POURRAIENT SURVENIR.**

### LEVER LE CYLINDRE EN POSITION

La meuleuse RG5500 de série n'est pas livrée avec un dispositif de levage. Si l'établissement ne dispose pas de dispositif de levage, il est recommandé qu'un treuil et ensemble de flèche ou une plateforme élévatrice arrière soit utilisé.

TREUIL ET ENSEMBLE DE FLÈCHE

Le treuil et ensemble de flèche se monte sur la partie arrière droite du cabinet. Lorsque vous utilisez le treuil et la flèche, positionner l'unité de coupe derrière la machine et fixer le palonnier à l'unité de coupe. Utiliser le treuil pour soulever l'unité et balancer le cylindre sur la zone de travail de la machine. (Se reporter au manuel dans l'ensemble pour d'autres instructions.) Voir la figure 9 - Disponible avec un treuil manuel ou électrique.

PLATEFORME ÉLÉVATRICE ARRIÈRE

La table élévatrice arrière est une plateforme portative qui peut être utilisée pour soulever le cylindre au niveau de la meuleuse. Le cylindre peut être roulé sur la plateforme avec l'avant du cylindre faisant face à la meuleuse. Avec la pince du rouleau arrière enlevée le cylindre peut être roulé par l'arrière sur la machine à partir de la plateforme. La station de travail utilise un système de 12V rechargeable pour alimenter la plateforme et peut être déplacé autour de l'installation sur 4 roulettes.
Voir la Figure 10

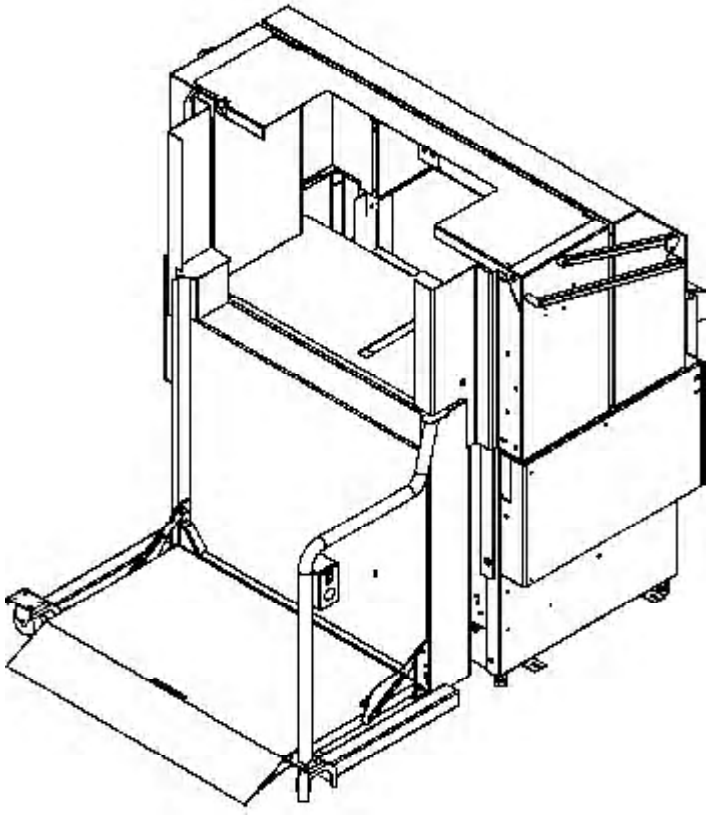


**Figure 10**

**INSTALLER LE CYLINDRE**

Déplacer le cylindre à la position approximative en ayant le rouleau arrière sur la table, et le rouleau avant sur les brides frontales.

**S'ASSURER QUE LA MEULE SOIT SUFFISAMMENT BASSE POUR QU'ELLE NE TOUCHE PAS LE CYLINDRE. VOUS POUVEZ ABAISSER LA MEULE EN TOURNANT LES DEUX VOLANT DANS LE SENS CONTRAIRE DES AIGUILLES D'UNE MONTRE.**

Positionner le cylindre au centre de la machine. Déplacer les brides aussi loin que possible aux extrémités du rouleau avant. (VOIR FIGURE 11). Utiliser l'autocollant sur la barre d'outillage pour aider à la mise en place de l'outillage avant. Vérifier le dégagement de l'outillage, du rouleau avant et du cadre avec à la fois des roues d'affûtage et de rectification. Cela permettra d'assurer que vous n'aurez pas à déplacer le cylindre entre le meulage pour l'affûtage et la rectification. REMARQUES : Sur de grands cylindres il peut être nécessaire de décaler un peu le cylindre du centre pour permettre au moteur d'entrainement d'être monté sur le côté approprié de l'unité de coupe.

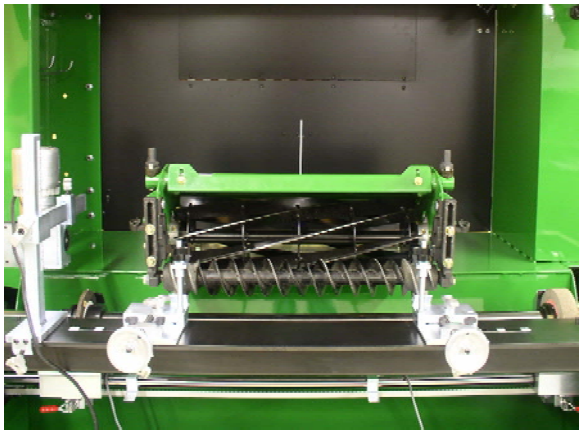


**Figure 11**

Placez le rouleau arrière sur la pince du rouleau arrière. (VOIR FIGURE 12).

Si vous utilisez les supports toutes positions, régler la hauteur verticale de la pince afin que le fond du cylindre soit de 1,5-2,0 po [38-51 mm] au dessus de la table. Il est également recommandé de monter le bras de support avec le moins d'extension du bras de support toutes positions que possible tous en laissant juste assez de dégagement pour le montage du cylindre pour monter le cylindre dans le « V » du bras de support.


**Figure 12**

Positionner l'intérieur et l'extérieur du cylindre en réglant les volants avants. Le cylindre doit être placé de manière à être à une heure ou une position angulaire de 30 ° par rapport à la meule. Voir la figure 13. S'il y a des problèmes de dégagement, le cylindre peut être déplacé vers l'avant ou vers l'arrière pour régler ce problème. Si vous affûtez un cylindre QA5 ou QA7 utiliser l'autocollant situé sur l'outillage pour localiser rapidement le cylindre dans la position optimale. Voir la figure 2. Après avoir correctement positionné le cylindre, verrouiller le rouleau avant et serrer la pince arrière. S'assurer que tous les boutons soient bien serrés avant l'affûtage.

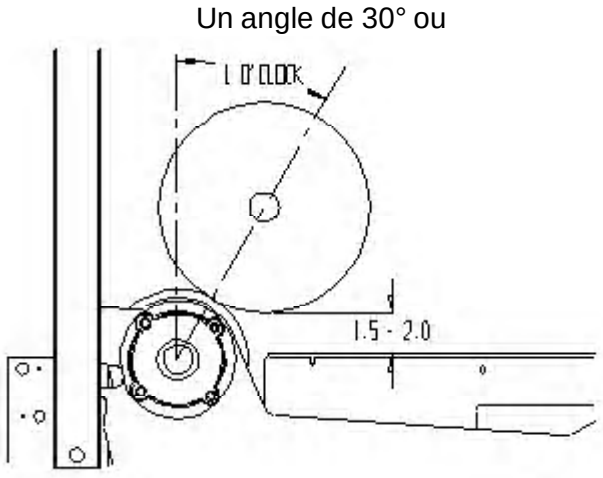



**Figure 13**

**SERRER FERMEMENT TOUS LES BOUTONS DE VERROUILLAGE AVANT L'AFFÛTAGE. TOUS LES BOUTONS, PINCES OU ROULEMENTS DESSERRÉS NUIRONT À LA QUALITÉ DE L'AFFÛTAGE.**

# CONSIGNES D'OPÉRATION (Suite)

## ALIGNER LE CYLINDRE

**IMPORTANT :** Lors de la mesure à l'arbre central du cylindre toujours vous assurer que vous touchez à une zone exempte de saleté et d'herbe.

L'extension du support de la jauge numérique horizontale est réglable en hauteur pour permettre à la jauge numérique d'être positionnée afin d'éviter tout longeron du châssis de cylindre. En outre, le montage de la glissière verticale à l'assemblage soudé horizontal a trois positions. Retirer le bouton sur le côté pour ajuster l'inclinaison de la glissière verticale si nécessaire pour éviter un longeron du châssis de cylindre. Voir la figure 14.

Avant d'aligner l'unité de coupe, desserrer le bouton de verrouillage horizontal de l'outillage, pour permettre l'ajustement du plan horizontal de l'unité de coupe. Voir la figure 14.

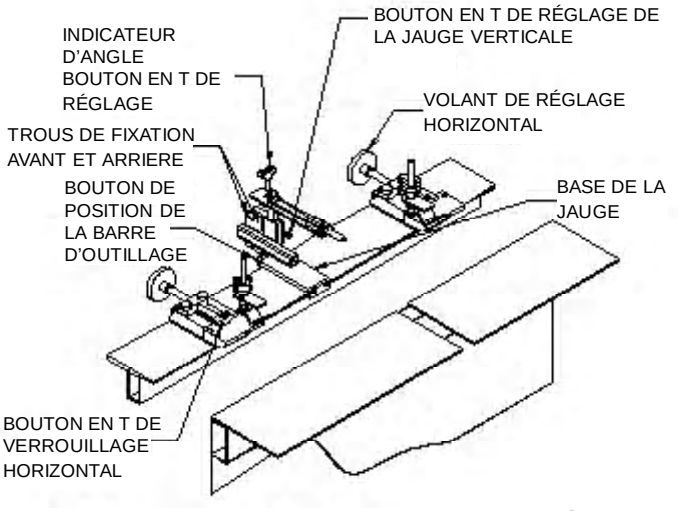



**Figure 14**

Pour aligner l'unité de coupe, déplacer l'assemblage de jauge numérique, aussi loin que possible sur le côté gauche du cylindre. Étendre la jauge numérique en s'assurant que la pointe de la jauge soit centrée sur l'arbre central du cylindre. Voir la figure 15. Avec la jauge pressée contre l'arbre central du cylindre, régler la jauge à zéro. Écarter la jauge et passer à la droite du cylindre et mesurer au centre de l'arbre du cylindre. Ne pas faire tourner l'arbre du cylindre à l'exception du minimum s'il y a des problèmes de dégagement pour les lames du cylindre. Avec la jauge contre l'arbre du centre, ajuster le volant horizontal jusqu'à ce que la jauge soit à zéro. Répéter les ajustements allant d'un côté à l'autre jusqu'à ce que l'alignement soit en dedans de ,005 "[0,13 mm].

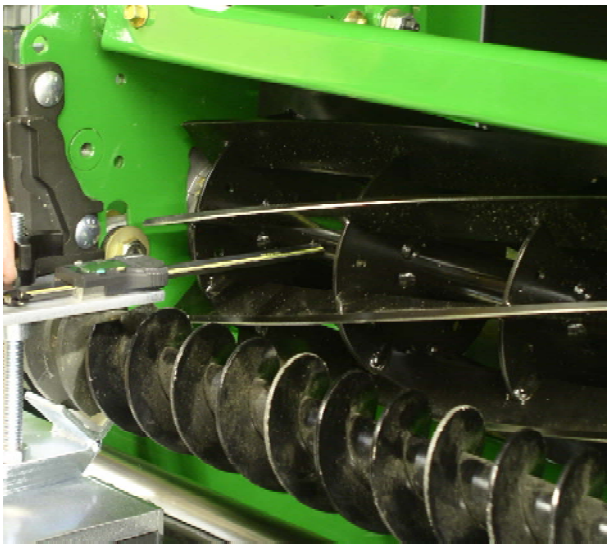


**Figure 15**

## VÉRIFIER LA CONICITÉ

Tout d'abord, mesurer le côté gauche du cylindre et le plus à gauche possible avec la jauge d'alignement numérique, assurez-vous que l'extrémité de la jauge est centrée sur l'arbre central du cylindre. Régler la jauge à zéro, puis mesurer jusqu'à l'arête d'une lame. Se rappeler ou écrire ce numéro. Se déplacer de l'autre côté et refaire la même chose. Comparer les deux nombres, la différence est la quantité de conicité dans le **rayon** de la roue.

**REMARQUE : POUR OBTENIR UNE JUSTE LECTURE DE CONICITÉ À UTILISER PLUS TARD AVEC LE TABLEAU DE CONICITÉ, LA LECTURE DOIT ÊTRE PRISE LE PLUS PRÈS POSSIBLE DU BOUT DU CYLINDRE EN INDIQUANT LA DISTANCE MAXIMALE ENTRE LES LECTURES.**

Pour retirer la conicité du cylindre, le côté du cylindre qui est plus large devra être rectifié en plongée pour supprimer ce matériel supplémentaire.

Retirer la jauge et emmagasiner la jauge numérique sur la broche située sur le côté avant droit de la machine. La base de la jauge peut être placée à l'écart à l'intérieur de la machine.

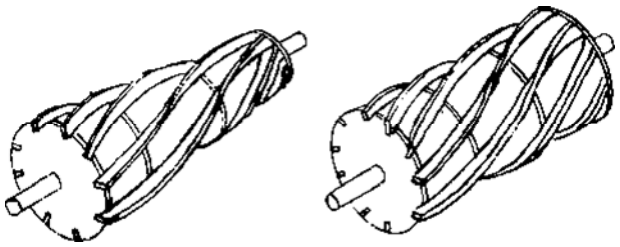


**Figure 16**

## ALIGNEMENT DE L'ARBRE D'AFFÛTAGE AU CYLINDRE

Pour aligner l'arbre d'affûtage au cylindre, mettre l'arbre de sorte que la roue d'affutage soit d'environ ¼ de pouce [6 mm] des lames du cylindre. Déplacer la roue d'affutage d'un côté du cylindre et élever l'arbre d'affûtage jusqu'à ce que la roue touche à peine la lame. Déplacer la roue de l'autre côté du cylindre et mettre l'arbre en place jusqu'à ce que la roue touche à peine. Vérifier à nouveau d'un côté à l'autre et faire des ajustements mineurs jusqu'à ce que la roue touche pareillement aux deux extrémités du cylindre. L'arbre d'affûtage est désormais aligné verticalement au diamètre extérieur du cylindre. Mettre les jauges situées sur le boîtier de réglage vertical à zéro. Vérifier les points hauts du cylindre en déplaçant la roue, la longueur du cylindre tout en tournant le cylindre. Si il y a des points hauts descendre l'arbre également aux deux extrémités et remettre à nouveau la jauge à zéro.

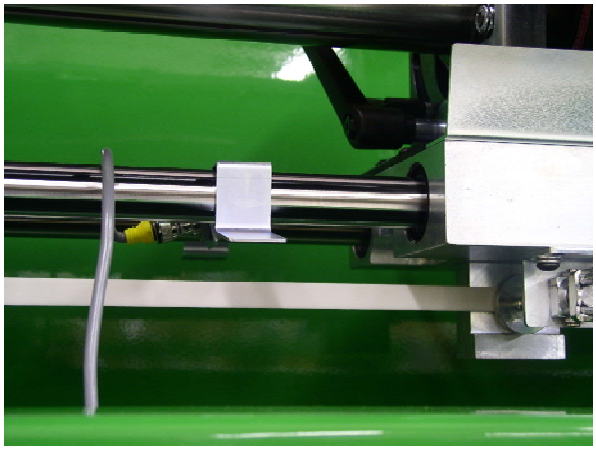


**Figure 17**

## REGLAGE DES LIMITES DE TRAVERSÉE

Déplacer la meule vers la droite jusqu'à ce que la roue ait dégagé le cylindre d'environ ¼ de pouce [6 mm] (si le dégagement au longeron le permet). Dégager les ensembles de rectification et d'affûtage de la courroie de traversée. Tourner le potentiomètre de vitesse de traversée à zéro et activer le commutateur du moteur de traversée. Cela activera les capteurs de proximité. Déplacer le commutateur de limite de déplacement droit jusqu'à ce que la lumière sur le capteur de proximité s'allume. Déplacer la roue à l'extrémité opposée, dégageant le cylindre comme mentionné ci-dessus, et régler le commutateur de limite de déplacement gauche. (Fig. 17) Engager la courroie de traversée et augmenter lentement la vitesse de la traversée. Permettre à la roue de traverser d'un bout à l'autre pour vérifier les commutateurs d'arrêt et d'inverser le sens de la meule. Vérifier que la meule se déplace pleinement à chaque extrémité du cylindre. Commentaire : Si le cylindre est pour frapper le châssis, alors régler les capteurs de déplacement de sorte que la roue ne touche pas le châssis.

**! SI LE CHÂSSIS DU CYLINDRE S'ÉTEND SOUS LE CYLINDRE, S'ASSURER QUE L'ARRÊT EST RÉGLÉ DE MANIÈRE À CE QUE LA MEULE NE FRAPPE PAS LE CHÂSSIS PENDANT LA RECTIFICATION.**

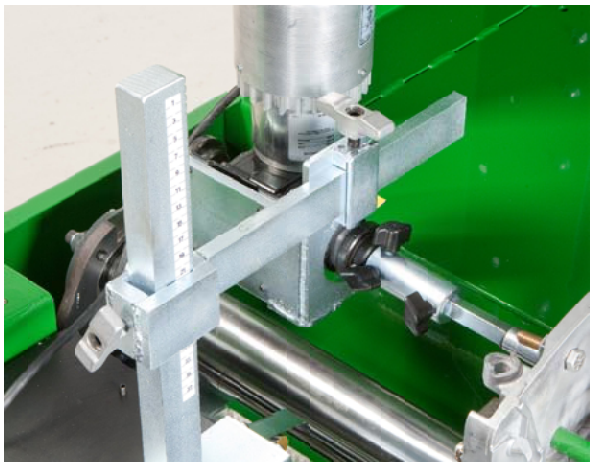


**Figure 18**

## FIXATION DU MOTEUR D'ENTRAINEMENT DE VITESSE VARIABLE AU CYLINDRE

L'unité du moteur d'entraînement s'attache au bout de l'arbre du cylindre ou à un composant du système d'entraînement. Consulter le manuel de coupe de l'unité pour le placement approprié du moteur d'entrainement et de l'attachement. Déterminer de quel côté monter le moteur d'entrainement. Ce sera généralement le même composant du système d'entraînement qui sera utilisé pour rôdage. Voir la figure 18.

**IMPORTANT :** Lors de l'affûtage, le cylindre doit tourner dans le même sens que la meule. Voir la figure 19.

Avant de positionner l'unité d'affûtage familiarisons-nous avec les réglages disponibles et les ensembles de coupleur/ entraînement. Voir la figure 20.

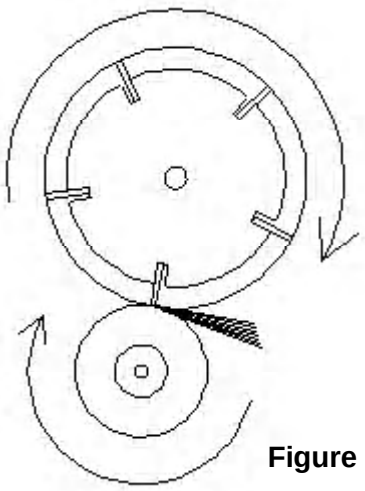


**Figure 19**

# CONSIGNES D'OPÉRATION (Suite)

**Bouton A—**
Permet à l'unité d'affûtage d'être déserrée et déplacée vers l'intérieur et l'extérieur.
**Bouton B-**
Permet à l'unité d'affûtage d'être déserrée et déplacée vers le haut et le bas
**Bouton C –**
Permet à l'assemblage d'affûtage d'être déserrée de la barre d'outillage et déplacée côte à-côte.

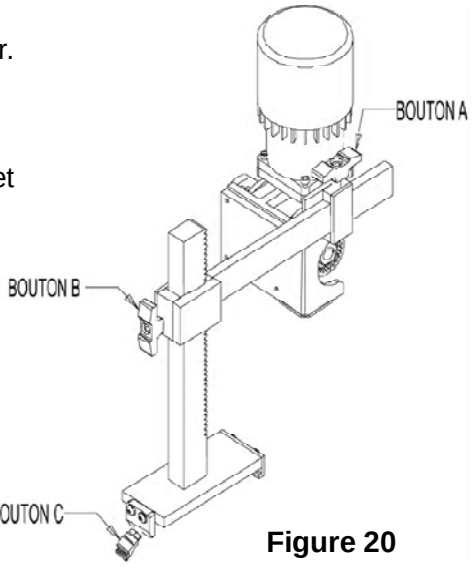


**Figure 20**

Lors du positionnement de l'unité d'affûtage, il peut être nécessaire de compléter plusieurs des ajustements ci-dessus pour aligner correctement l'unité d'affûtage au cylindre.

**L'ASSEMBLAGE DE COUPLEUR COMPREND :**
**COUPLER AVEC MANCHON DE CAOUTCHOUC :** Il est placé dans le coupleur bride correspondant déjà monté dans l'arbre d'entraînement rotatif. Voir la figure 21.
**ASSEMBLAGE ADAPTATEUR COUPLEUR D'ENTRAINEMENT :** Ceci est monté sur le coupleur en caoutchouc.
Commentaire : Si l'assemblage adaptateur coupleur est retiré, il y a un petit arbre d'entraînement carré fixé au manchon de serrage. Ceci peut être utilisé avec une douille si l'espace est limité.
**MANCHON DE SERRAGE :** connecter le coupleur en caoutchouc à l'adaptateur d'entraînement carré.
**ADAPTATEUR D'ENTRAÎNEMENT CARRÉ :** Ceci est insérée dans l'adaptateur coupleur d'entraînement. L'adaptateur d'entraînement carré a environ 2 po [51 mm] de mouvement. Il sera nécessaire de le déplacer lors de la fixation du cylindre à l'unité d'entraînement rotatif. Cet arbre adaptateur a une rainure usinée dessus à l'extrémité opposée du segment d'arrêt. Cette rainure est là pour vous informer que vous avez atteint l'extension maximale de l'arbre d'entraînement carré. Si vous ne pouvez pas joindre le cylindre sans rallonger au-delà de cette rainure, alors l'unité d'affûtage doit être repositionnée sur la barre d'outils (bouton C). Une douille d'entrainement carrée de 1/2 po [12,7 mm] ou un adaptateur d'entraînement du cylindre est utilisé pour connecter l'adaptateur d'entraînement carré au cylindre.

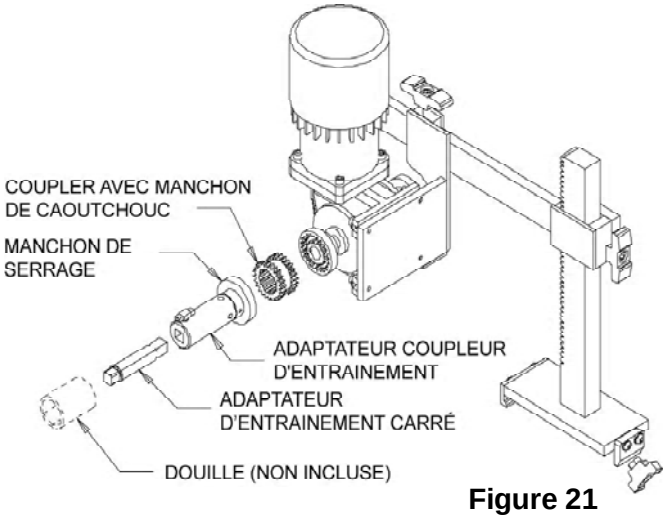


**Figure 21**

**REMARQUES :** La douille d'entrainement carrée de 1/2 po [12,7 mm] ou l'adaptateur qui est placé sur le cylindre lors de l'affûtage n'est ***PAS*** inclus avec la meuleuse. Voir la page suivante pour plus de détails

**NE PAS RALLONGER L'ARBRE CARRÉ AU DELÀ DE LA RAINURE, AU LIEU DE CELA REPOSITIONNER L'UNITÉ D'AFFÛTAGE.**

Les procédures suivantes rendra l'installation de l'unité d'entraînement rotatif plus facile.

**1.** Déplacer l'unité d'entraînement rotatif à proximité du cylindre. Aligner l'arbre sur l'entrainement rotatif avec l'écrou sur le cylindre en complétant les ajustements nécessaires discutés ci-dessus.
**2.** Maintenant faire glisser l'unité d'entraînement rotatif d'environ 7 po [18 cm] à partir du point d'accouplement de l'entraînement du cylindre et serrer de manière sécuritaire à la barre d'outillage en resserrant le bouton de verrouillage. (Bouton C)
**3.** Placer la douille d'entrainement carrée appropriée de 1/2 po [12,7 mm] ou l'adaptateur sur l'écrou d'entraînement du cylindre, puis insérer l'arbre d'entraînement carré dans la douille. Placer le manchon de serrage sur l'arbre d'entraînement et y insérer l'assemblage adaptateur coupleur d'entrainement. Enfin placer le coupleur en caoutchouc sur l'adaptateur coupleur d'entraînement. Voir la figure 21.
**4.** En maintenant l'arbre d'entraînement carré fermement en position avec votre main gauche, vous serez en mesure de déplacer les autre composants vers la droite et insérer le coupleur en caoutchouc dans la bride sur l'unité d'entraînement rotatif. Lorsque cela est fait serrer les bouton en T sur le manchon de serrage pour tenir toutes les pièces en place.
**5.** Enfin réajuster l'unité d'entraînement rotatif si elle n'est pas dans l'alignement.

NOTE : Il n'est pas nécessaire d'avoir un alignement parfait, mais il doit être suffisamment proche pour que le coupleur reste engagé et que l'excès de couple ne soit pas appliqué au cylindre.

# CONSIGNES D'OPÉRATION (Suite)

**ADAPTATEURS D'ENTRAÎNEMENT DU CYLINDRE**

Cette meuleuse est équipée d'un adaptateur qui transfère la rotation du couplage de la boîte de vitesses de l'entrainement rotatif à un mâle carré de 1/2 po. Pour faire fonctionner la meuleuse vous nécessitez un adaptateur à partir de ce mâle carré de 1/2 po à l'arbre du cylindre. Ces adaptateurs ne sont **PAS** inclus avec cette meuleuse.

La plupart des unités de coupe ces dernières années ont une cannelure mâle ou femelle à l'extrémité de l'arbre du cylindre qui se connecte à un arbre à moteur hydraulique ou électrique.

Si vous avez un arbre de cylindre qui a une extrémité interne filetée à laquelle vous pouvez accéder, installer un boulon à six pans ou une vis à tête avec entraînement intérieur du même diamètre du filet avec un contre-écrou très serré de sorte qu'il ne se desserre pas lors de l'affûtage puis entraîner avec une prise d'entraînement de 1/2 po pour cet hexagone ou clé hexagonale de cette grosseur.

**CYLINDRE JOHN DEERE**

ACCOUPLEMENTS-Les arbres cannelés externes utilisent un accouplement cannelé femelle entre l'arbre du cylindre et l'arbre du moteur hydraulique cannelé mâle La cannelure est soit une cannelure de 8,9 ou 11 dents. Notre recommandation est d'acheter l'accouplement femelle cannelé de John Deere et de le souder à une courte douille d'extension carrée de 1 / 2 po.

Commentaire : L'adaptateur de cannelure de 8 dents peut être utilisé avec un réducteur augmentateur carré [3/8 po mâle carré à 1/2 po femelle carré] sans soudure.

| DIAMÈTRE DU CYLINDRE | TYPE DE CYLINDRE | Recommandation |
|---|---|---|
| 5 po | G, M | A un arbre externe 8-T. Utiliser un accouplement AET11038 |
| 7 po | H | A un arbre externe 11-T. Utiliser un accouplement TCA12581 (NOTE : CELA PEUT AUSSI ÊTRE VISSÉ AVEC UNE DOUILLE À SIX PANS 1,25) |
| 7 po | 26H | A un arbre externe 9-T. Utiliser un accouplement AET11310 (NOTE : CELA PEUT AUSSI ÊTRE VISSÉ AVEC UNE DOUILLE À SIX PANS 1,25) |
| 8 po | ESP | A un arbre extérieur M16 X 2. Utiliser un écrou A31869 et visser avec un douille à six pans de 24 mm. |
| 5 po | WBGM | Utiliser un boulon UNF 3/8-24, et visser avec une douille à six pan 9/16 |
| 5 po | QA5 | A un arbre cannelé externe 8-T. Utiliser la pièce AMT3022, pour faire un adaptateur. |
| 7 po | QA7 | A un arbre cannelé externe 11-T. Utiliser une douille à six pans de 1,25 ou faire un adaptateur avec la pièce TCA18958. |

ÉQUIPEMENT TORO :
Toro utilise une cannelure femelle de 8 dents ou une cannelure femelle de 9 dents sur ses cylindres. La cannelure femelle de 8 dents peut être vissée avec un réducteur augmentateur carré [3/8 po mâle carré à 1/2 po femelle carré]. La cannelure de 9 dents nécessite un adaptateur. Notre recommandation est d'acheter l'adaptateur Toro numéro de pièce TOR-4074 disponible chez K-Line Industries, Inc 315 Garden Ave. Holland, MI 49424.

ÉQUIPEMENT JACOBSEN :
Voici une liste des systèmes d'entraînement basés sur les unités de coupe :
* Les unités de cylindre de 5 po peuvent être vissées à partir de l'extrémité du cylindre qui n'est pas motorisé hydrauliquement. Installer un boulon de 3/8 po au bout de l'arbre du cylindre avec un écrou très serré afin qu'il ne se desserre pas lors du tournage. Utiliser une douille de 9/16 po pour visser. Elles peuvent également être vissées à partir de l'extrémité où le moteur hydraulique se trouve en compressant un réducteur augmentateur carré [3/8 po mâle carré à 1/2 po femelle carré] dans l'accouplement cannelé du cylindre numéro de pièce Jacobsen 337370 et utiliser cet assemblage compressé comme l'adaptateur.
* Les unités de cylindre de 7 po peuvent être vissées à partir de l'une ou l'autre des extrémités. L'unité de cylindre a un coupleur attaché à l'arbre du cylindre aux deux extrémités. Acheter la pièce Jacoben numéro 4102440, arbre du moteur du cylindre et souder l'arbre du moteur hydraulique de l'ensemble à une douille 1/2 po et utiliser cet assemblage soudé comme adaptateur.
* Les unités de cylindre Tri-King peuvent être vissées sur les anciennes unités d'entraînement à poulie avec une douille 9/16 po sur le boulon 3/8 po qui retient la poulie. Sur les nouvelles unités cannelées, acheter l'accouplement cannelé du cylindre numéro de pièce Jacobsen 132002 et compresser un réducteur augmentateur carré [3/8 po mâle carré à 1/2 po femelle carré] dans l'accouplement cannelé du cylindre et utiliser cet assemblage comme adaptateur.

**RECOMMANDATION POUR LE T/M DE L'ENTRAINEMENT ROTATIF ET LA VITESSE DE TRAVERSÉE LORS DE L'AFFÛTAGE**

**TR/MIN DE L'ENTRAINEMENT ROTATIF**

**LE T/M DE L'ENTRAINEMENT ROTATIF EST TRES IMPORTANT POUR OBTENIR UN AFFÛTAGE DE QUALITÉ. ÉTABLIR LE T/M DE L'ENTRAINEMENT ROTATIF AVEC SOIN, D'APRÈS LES INSTRUCTIONS CI-DESSOUS.**

En général, le T/M de l'entrainement rotatif sera entre 180 T/M (45%) et 380 T/M (100%). La vitesse nécessaire pour faire tourner un cylindre spécifique est en fonction du diamètre du cylindre, le nombre de lames du cylindre, et la dureté du cylindre. Pour tous les cylindres, il y a une vitesse de rotation optimale où il y a un affûtage **AGRESSIF**, mais lisse au fur et à mesure que vous affûtez le cylindre. Votre objectif est d'affûter le cylindre le plus agressivement et aussi vite que possible tout en maintenant une qualité supérieure.

Il est recommandé de commencer d'affûter chaque cylindre à une vitesse de rotation de 200 T/M (50%) et d'évaluer la vitesse de rotation en ajustant à la hausse ou à la baisse pour optimiser la vitesse de rotation de ce cylindre. Si la vitesse de rotation est mal réglée, vous pourriez éprouver deux problèmes, rhabillage de la meule ou la résonance de la meule. Chacun de ces problèmes est expliqué ci-dessous.

Sur certains cylindres, en particulier les cylindres de petit diamètre ayant un compte élevé de lames, si la vitesse d'affûtage T/M est trop élevé, le cylindre peut agir comme un rhabilleur pour la meule. Il peut se développer ce qui semble être un affûtage très agressif (comme si l'alimentation s'était auto alimentée), puis un arrêt soudain d'affûtage avec aucun contact entre la roue de meulage et le cylindre. Si cela se produit, votre vitesse de rotation était trop élevé et vous avez efficacement rhabillé votre meule.

Certains cylindres ont un T/M résonant où le cylindre va en harmoniques avec la roue d'affûtage et la résonance fait vibrer la meuleuse et entraine un très mauvais affûtage. En changeant la vitesse de rotation à un T/M supérieur ou inférieur vous sortirez hors de la plage de résonance.

Après avoir déterminé la meilleure vitesse de rotation T/M du cylindre, noter le T/M sur le « tableau d'installation » dans la section « NOTES ». (Le tableau d'installation est situé à l'arrière de ce manuel) En notant le T/M approprié, vous évitera d'évaluer la vitesse de rotation, la prochaine fois que vous affûterez le cylindre. Noter également la position de l'entrainement de rotation en utilisant l'autocollant de position sur le support de rotation et documenter la position sur le «tableau d'installation ».

**T/M DE L'ENTRAINEMENT DE TRAVERSÉE**

Le potentiomètre de vitesse de traversée est réglable d'environ 5 pieds par minute [1,5 mètres par minute] à 20 pieds par minute (6 mètres par minute). Il est recommandé d'affûter entre 15 et 20 pieds par minute (4 et 6 mètres par minute).

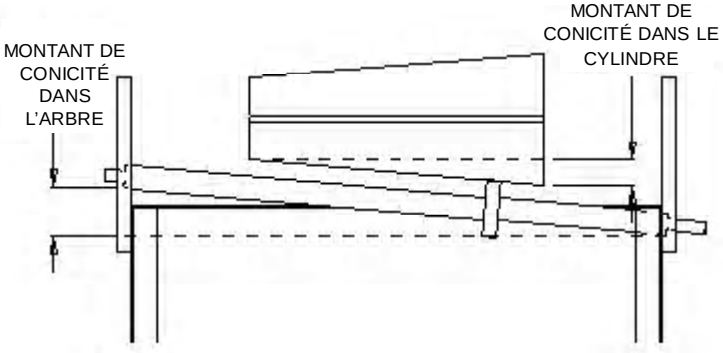
L'affûtage à une vitesse plus lente de traversée, 10 pieds par minute (3 mètres par minute) à titre d'exemple, vous donnera une meilleure finition, mais prolongera la durée du cycle d'affûtage. La finition de l'affûtage versus la durée du cycle d'affûtage est contrôlée par le choix de l'opérateur.

**COMPENSATION DE LA CONICITÉ.**

Pour maintenir la meilleure qualité de coupe, la conicité d'un cylindre doit être retirée retournant le cylindre à un vrai cylindre. Pour retirer la conicité qui a été mesurée avec la jauge (comme indiqué précédemment dans la section Vérifier la conicité) d'abord aligner le cylindre à l'arbre par la méthode de contact (comme indiqué précédemment). Descendre ensuite le côté de l'arbre d'affûtage qui est élevé (le plus petit côté du cylindre) le distance proposée dans le tableau
[**Voir le tableau à la page suivante ou le tableau de compensation de conicité situé sur la machine].**

Example : Pour un cylindre de 22 pouces [56 cm] de long avec une conicité mesurée de 0,12 po [3 mm], l'ajusteur sur le plus petit côté du cylindre serait descendu afin de lire 0,546 [13,9 mm].

Cela amènera l'arbre d'affûtage parallèle au centre de l'arbre du cylindre. Remettre les jauges numériques situées sur les tours de réglage verticales à zéro et alimenter les deux côtés également jusqu'à ce que la roue touche le grand côté du cylindre. Remettre les jauges de nouveau à zéro, vous êtes maintenant prêt à meuler et à retirer la conicité. Lors du meulage, la roue ne rentrera en contact qu'avec le grand côté du cylindre et meulera progressivement plus au fur et à mesure que les grandes aires sont meulées. Le bouton de renverse peut être utilisé pour aider à accélérer ce processus. Affûter jusqu'à ce qu'un contact complet soit fait sur toute la longueur du cylindre, et que le cylindre soit affûté sur la largeur entière de toutes les lames.



# CONSIGNES D'OPÉRATION (Suite)

**TABLEAU D'INSTALLATION D'AJUSTEMENT DE LA LARGEUR DE LA CONICITÉ**

| MESURÉ DU CYLINDRE | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 |
|---|---|---|---|---|---|---|---|---|---|
| 0,005 | 0,033 | 0,029 | 0,025 | 0,023 | 0,021 | 0,019 | 0,017 | 0,016 | 0,015 |
| 0,010 | 0,066 | 0,058 | 0,051 | 0,045 | 0,041 | 0,038 | 0,035 | 0,032 | 0,030 |
| 0,015 | 0,100 | 0,086 | 0,076 | 0,068 | 0,062 | 0,056 | 0,052 | 0,048 | 0,045 |
| 0,020 | 0,133 | 0,115 | 0,102 | 0,091 | 0,082 | 0,075 | 0,069 | 0,064 | 0,060 |
| 0,025 | 0,166 | 0,144 | 0,127 | 0,114 | 0,103 | 0,094 | 0,086 | 0,080 | 0,075 |
| 0,030 | 0,199 | 0,173 | 0,153 | 0,136 | 0,123 | 0,113 | 0,104 | 0,096 | 0,089 |
| 0,035 | 0,233 | 0,202 | 0,178 | 0,159 | 0,144 | 0,132 | 0,121 | 0,112 | 0,104 |
| 0,040 | 0,266 | 0,231 | 0,203 | 0,182 | 0,165 | 0,150 | 0,138 | 0,128 | 0,119 |
| 0,045 | 0,299 | 0,259 | 0,229 | 0,205 | 0,185 | 0,169 | 0,156 | 0,144 | 0,134 |
| 0,050 | 0,332 | 0,288 | 0,254 | 0,227 | 0,206 | 0,188 | 0,173 | 0,160 | 0,149 |
| 0,060 | 0,399 | 0,346 | 0,305 | 0,273 | 0,247 | 0,225 | 0,207 | 0,192 | 0,179 |
| 0,070 | 0,465 | 0,403 | 0,356 | 0,318 | 0,288 | 0,263 | 0,242 | 0,224 | 0,209 |
| 0,080 | 0,532 | 0,461 | 0,407 | 0,364 | 0,329 | 0,301 | 0,277 | 0,256 | 0,238 |
| 0,090 | 0,598 | 0,519 | 0,458 | 0,409 | 0,370 | 0,338 | 0,311 | 0,288 | 0,268 |
| 0,100 | 0,665 | 0,576 | 0,508 | 0,455 | 0,412 | 0,376 | 0,346 | 0,320 | 0,298 |
| 0,120 | 0,798 | 0,692 | 0,610 | 0,546 | 0,494 | 0,451 | 0,415 | 0,384 | 0,358 |

**Ajustement à la baisse du petit côté du cylindre.**

## AFFÛTAGE

Après que le cylindre ait été aligné et la conicité ait été ajustée , vous êtes maintenant prêt à affûter le cylindre. Fermer les portes de garde avant et arrière. (La meule et le moteur rotatif ne fonctionneront que si les portes sont fermées.) Positionner le sélecteur d'affûtage/rectification à la position affûtage. Allumer le moteur d'affûtage et l'interrupteur du moteur d'entrainement de la rotation. Régler la vitesse de rotation à environ 200 T/M (Reportez-vous au t/m de l'entrainement rotatif à la page précédente). S'assurer que la vitesse de rotation soit la même que la meule - dans le sens horaire (CW) vue du côté droit. Voir la figure 22.

IMPORTANT : Lorsque le cylindre tourne dans la même rotation que la meule, le point de contact où ils se rencontrent est dans des directions opposées.

Activer le commutateur du moteur de traversée et tourner le cadran de vitesse à environ 15 à 20.

IMPORTANT : Si l'affûtage commence à devenir lourd, ajuster la meulette jusqu'à ce qu'elle puisse se déplacer sur toute la longueur du cylindre sans affûtage lourd.

Lors de l'affûtage, alimenter la roue d'environ ,005 po [0,13 mm] à la fois. Permettre à la roue d'affûtage de se déplacer avec un mouvement de va-et-vient le long du cylindre de 2 à 3 fois avant l'alimentation. L'affûtage est complété lorsqu'un contact complet est achevé sur toute la longueur du cylindre, sur toute la largeur de toutes les lames et le cylindre est aiguisé. La dernière passe devrait normalement être une passe normale de 0,005 [0,13 mm] alimentée à une vitesse de traversée lente (environ 8 pieds par minute [2,5 mètres par minute] ou plus lente). Après la dernière passe mettre la meule hors tension. (Remarque: En raison de la position du cylindre à une heure, alimenter la roue de ,015 pouce [0,38 mm] supprimera 0,010 pouces de matériel.)

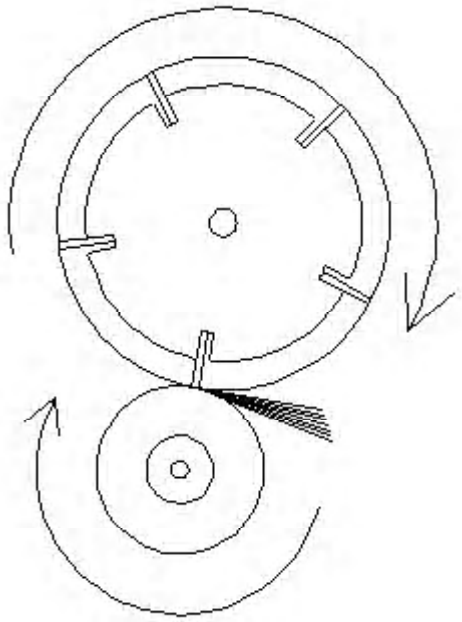


**Figure 22**

**RECTIFICATION**

Pour passer à la rectification, dégager l'assemblage du moyeu et de la roue d'affûtage et le placer le plus loin possible vers la droite. Amener l'assemblage de moyeu de rectification au dessus du cylindre pour la rectification. Cela exigera le repositionnement des supports d'interrupteurs de proximité de déplacement.

Commentaire : Comme le diamètre du cylindre devient plus petit et le nombre de lames augmente, le diamètre de la roue de rectification fonctionne mieux lorsque plus petite.

Par exemple, un cylindre de tondeuse de vert de 5 po [127 mm] avec 11 lames atteindra un meilleur angle de rectification avec une plus petite meule.

**SPIRALE DE CYLINDRE**

Vérifier si votre unité de coupe est normalement hélicoïdale ou inversée.
**REMARQUES :** En regardant dans le guide de doigts à **LA PAGE SUIVANTE, IL MONTRE L'HÉLICE NORMALE D'UN CYLINDRE.** En regardant dans le guide de doigts à la **PAGE SUIVANTE, IL MONTRE L'HÉLICE INVERSÉE D'UN CYLINDRE.** Le point culminant du doigt de rectification est sur le côté droit de la meule.

La plupart des unités de coupe sont une hélice normale.

**LE POINT CULMINANT DU DOIGT DE RECTIFICATION DOIT TOUJOURS ÊTRE AU COIN DE LA MEULE QUI FAIT CONTACT AVEC LE CYLINDRE. SUR CETTE MEULE C'EST TOUJOURS DU CÔTÉ DROIT DE LA MEULE.**

**RHABILLAGE DU CYLINDRE**

Si la meule devient pleine de matériel, il peut être nécessaire de rhabiller la meule. Le RG5500 vient avec un rhabilleur en diamants. Pour l'utiliser, placer le rhabilleur sur le bras d'entraînement de rotation horizontal dans la zone où la roue doit être rhabillée. Ajuster le rhabilleur à la position et à l'angle appropriés. Relever la meule de sorte qu'elle touche pratiquement le rhabilleur.

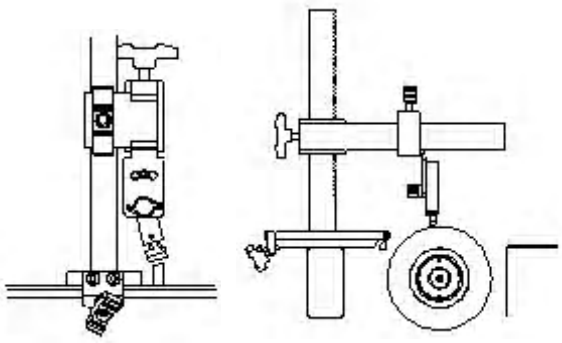
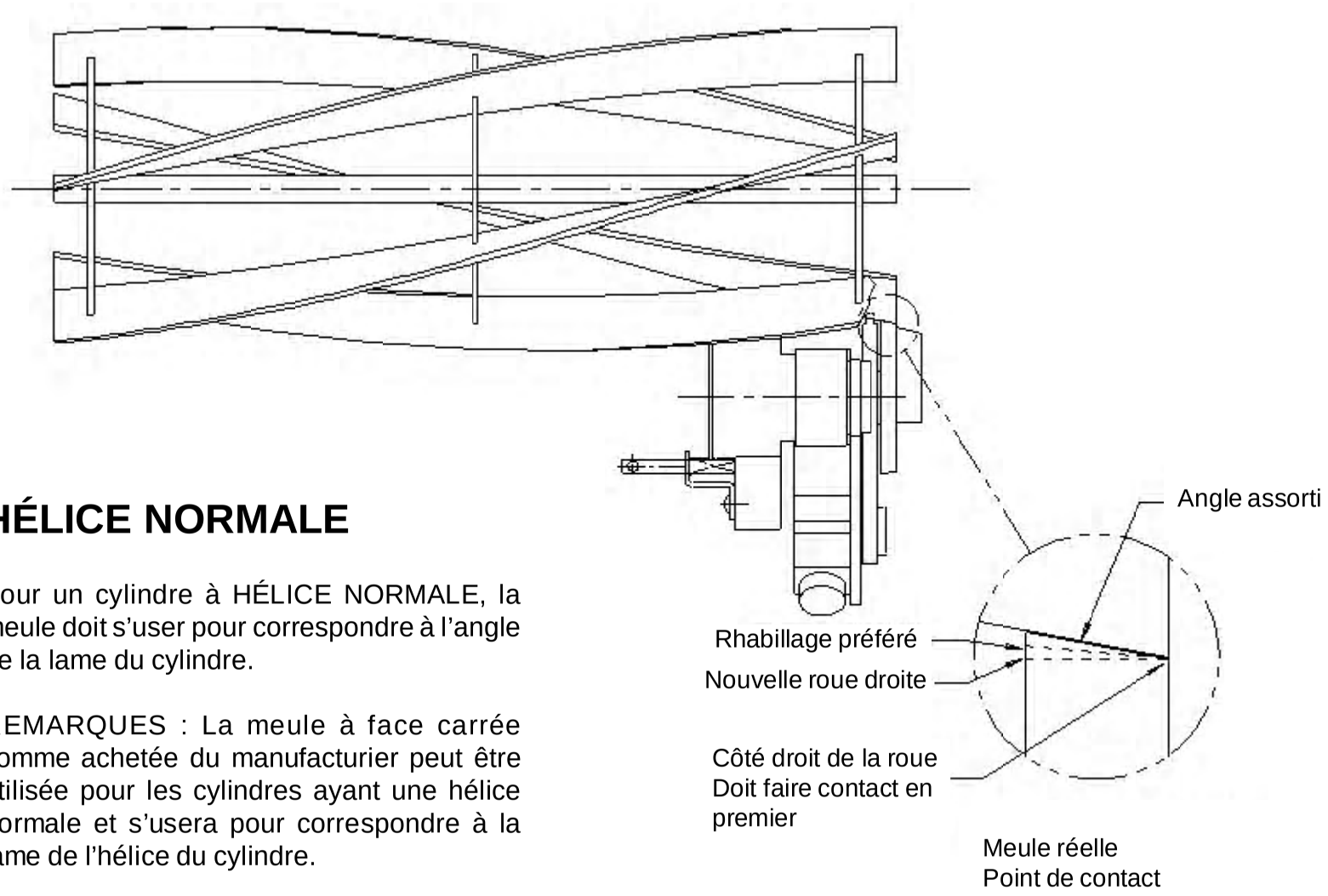


**Figure 23**

Pour rhabiller la meule, mettre le rhabilleur dans la position droite. Fermer les portes et alimenter la roue de rectification dans le rhabilleur et puis déplacer la meule d'un côté à l'autre contre le rhabilleur qui rhabillera la face complète de la roue.

Généralement, seulement alimenter ,002 po [,05 mm] à chaque passage. L'alimentation trop lourde peut endommager le rhabilleur ou la roue. Continuer le rhabillage jusqu'à ce que la roue apparaisse neuve ou que la forme juste soit atteinte.

Pour rhabiller la roue de rectification, mettre le rhabilleur dans le bon angle pour un cylindre ayant une hélice normale ou un cylindre ayant une hélice inversée. Fermer les portes alimenter la roue de rectification dans le rhabilleur. Ne **PAS** déplacer la meule de gauche à droite.

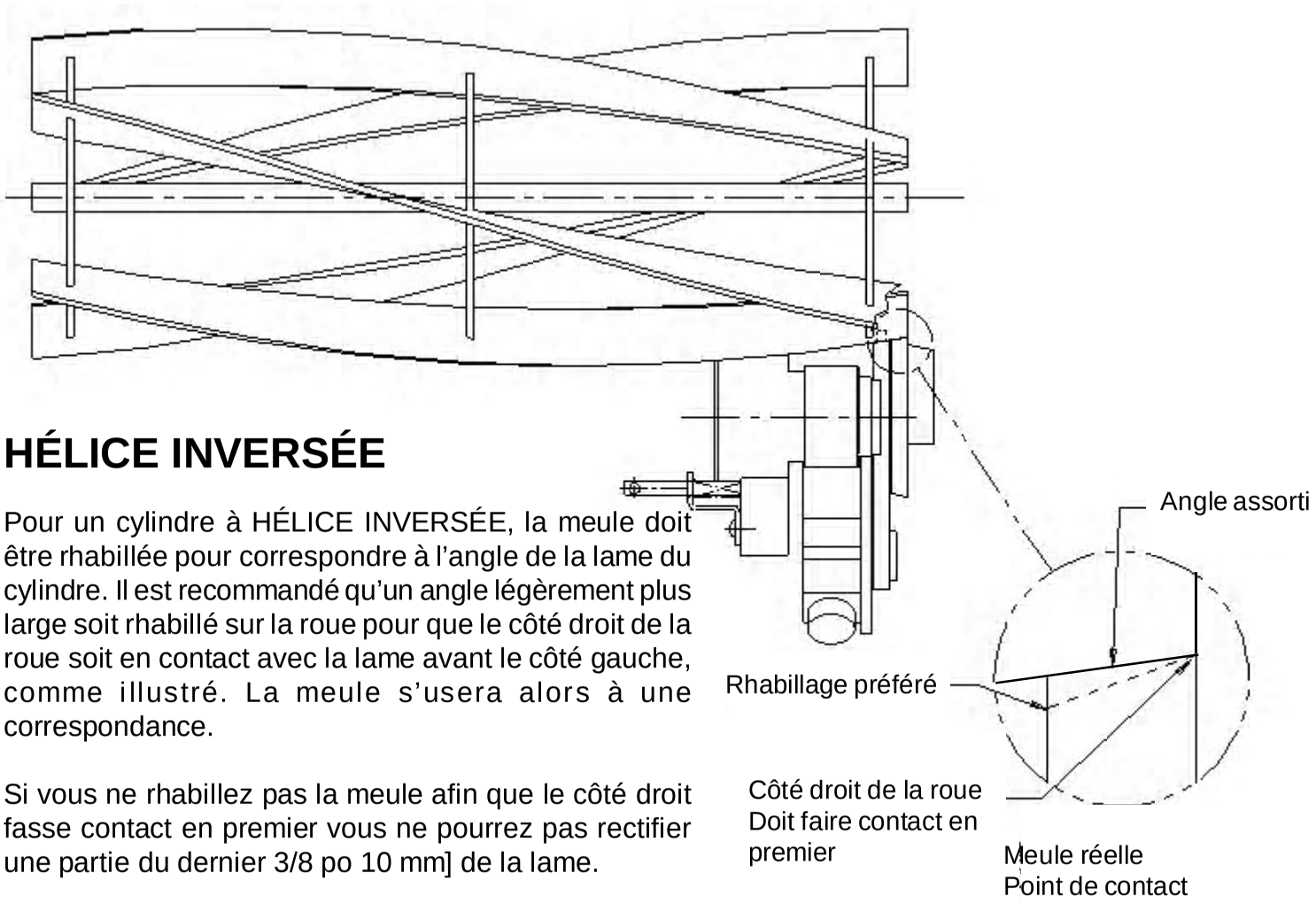



## HÉLICE NORMALE

Pour un cylindre à HÉLICE NORMALE, la meule doit s'user pour correspondre à l'angle de la lame du cylindre.

REMARQUES : La meule à face carrée comme achetée du manufacturier peut être utilisée pour les cylindres ayant une hélice normale et s'usera pour correspondre à la lame de l'hélice du cylindre.

Les cylindres a hélice normale sont également appelés première coupe du côté gauche (en regardant de l'avant -. position d'entrée de l'herbe) ou cylindre de rejet à droite (jette l'herbe à la droite de la position de l'opérateur).




## HÉLICE INVERSÉE

Pour un cylindre à HÉLICE INVERSÉE, la meule doit être rhabillée pour correspondre à l'angle de la lame du cylindre. Il est recommandé qu'un angle légèrement plus large soit rhabillé sur la roue pour que le côté droit de la roue soit en contact avec la lame avant le côté gauche, comme illustré. La meule s'usera alors à une correspondance.

Si vous ne rhabillez pas la meule afin que le côté droit fasse contact en premier vous ne pourrez pas rectifier une partie du dernier 3/8 po 10 mm] de la lame.

**REMARQUES :** Une roue qui a été usée pour correspondre à une hélice normale peut généralement être retirée et inversée à la meule du cylindre à hélice inversée.

Les cylindres a hélice inversée sont également appelés première coupe du côté droit (en regardant de l'avant -. position d'entrée de l'herbe) ou cylindre de rejet à gauche (jette l'herbe à la gauche de la position de l'opérateur).

# CONSIGNES D'OPÉRATION (Suite)

**RECTIFICATION SUITE**

Réinitialiser le commutateur de limite de déplacement de sorte que la meule soit dégagée du cylindre aux deux extrémités d'environ 1/16 po [1,5 mm].

Positionner l'interrupteur de sélection de rectification à couple de serrage variable.
(**IMPORTANT :** L'interrupteur d'entraînement de rotation doit être dans la position **ARRÊT** lors du changement de l'interrupteur de sélection de rectification.) Régler l'interrupteur d'entraînement de rotation pour faire tourner le cylindre dans le doigt d'arrêtage, dans le sens contraire des aiguilles d'une montre (CCW) quand on regarde le côté droit.
**NOTE :** La rotation du cylindre de couple de rectification est toujours de rotation de tournage opposée. NE PAS ALLUMER L'INTERRUPTEUR DU MOTEUR DE ROTATION.

Avec la traversée à la position d'accueil (du côté droit du capteur de proximité de la traversée allumé), alimenter la roue de rectification tout en tournant manuellement le cylindre jusqu'à ce que le doigt d'indexage touche la lame.

Tourner le potentiomètre de vitesse de traversée à zéro puis allumer le moteur d'entraînement de la traversée. Avec l'entraînement par courroie débrayé, déplacer manuellement l'ensemble de rectification vers la gauche jusqu'à ce que la lame du cylindre soit sur le doigt de rectification fixe.

À ce stade, si nécessaire, vous pouvez ajuster l'angle de dépouille en ajustant la position du doigt de rectification. Pour effectuer cet ajustement desserrer le levier d'ajustement de l'angle de dépouille. Voir la figure 24. La rotation du système de doigt vers le bas augmentera l'angle de dépouille et en tournant le système de doigt vers le haut diminue l'angle de dépouille. Le réglage de l'angle de dépouille ou la position d'arrêt du doigt d'indexage est plus facile avec la tête de rectification sur le côté gauche du cylindre.

Une fois que vous avez la meulette positionnée avec une lame de cylindre reposant sur le haut point du doigt de rectification fixe, régler la butée du doigt d'indexage. Il devrait y avoir environ 1/32 po [0,8 mm] à 1/16 po [1,5 mm] de jeu du doigt d'indexage à l'arrière de la lame. Le doigt d'indexage est à ressort à la position vers le haut ou contre le dos de la lame du cylindre. Pour vérifier le jeu, appuyer sur le doigt d'indexage. Voir la figure 24. S'il n'y a pas de jeu du doigt d'indexage vous voulez tourner le bouton de position de la butée ajustable du doigt d'indexage dans le sens contraire des aiguilles d'une montre. S'il y a plus de 1/16 po [1,5 mm] de jeu vous voulez tourner le bouton de position de la butée ajustable du doigt d'indexage dans le sens des aiguilles d'une montre.

IMPORTANT : La position du doigt d'indexage doit être réglé pour arrêter la lame du cylindre et permettre la traversée vers la gauche sans que la lame ne frappe le côté du doigt de rectification. Cette position doit également permettre 1/32 po [0,8 mm] de jeu du doigt d'indexage lorsque la lame est appuiée sur le haut point du doigth d'indexage.
Voir la figure 24.

Alimenter la meule jusqu'à il y ait un dégagement minimal entre la lame et la roue de rectification.

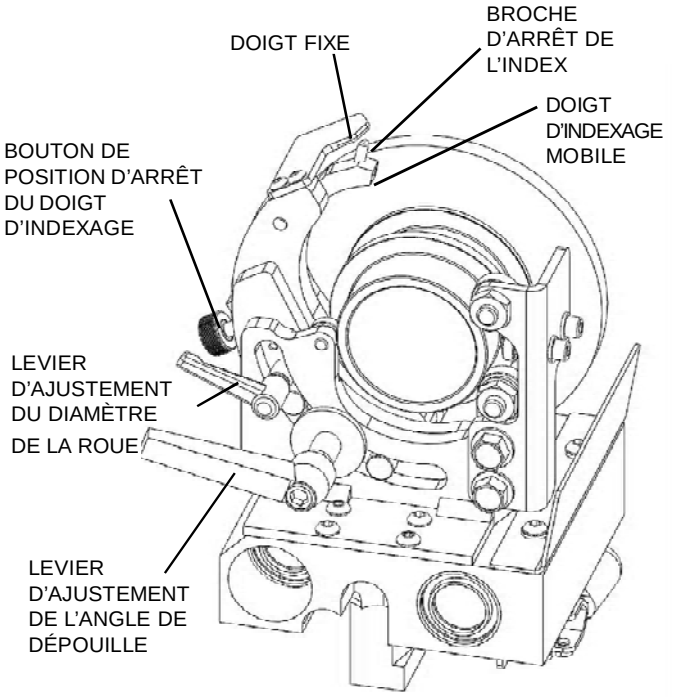



Figure 24.

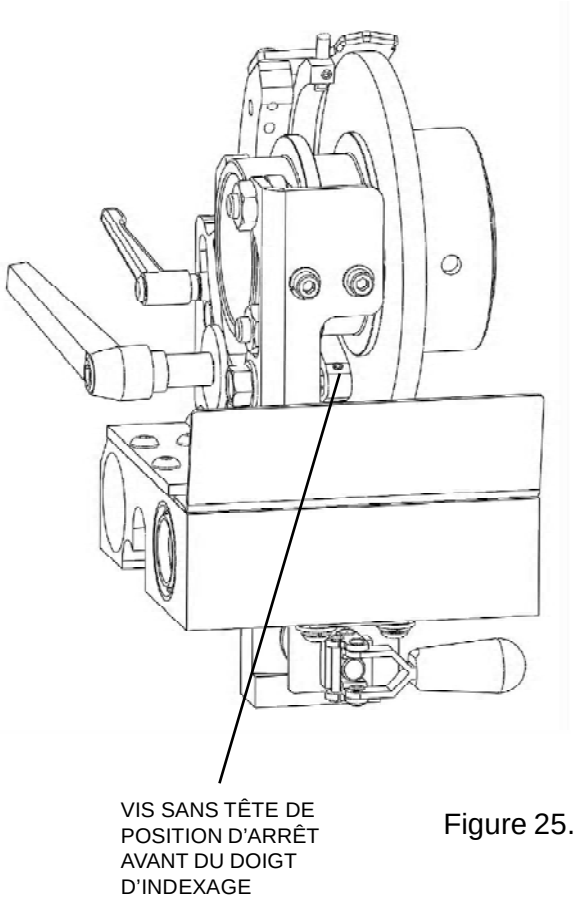



Figure 25.

**RECTIFICATION SUITE**

Fermer les portes avant et arrière.

Allumer l'interrupteur du moteur de rotation.

**REMARQUES :** L'entrainement rotatif appliquera la charge de pivotement contre les doigts.

Régler le potentiomètre de couple de rectification à environ 15. **IMPORTANT :** Les cylindres tournant librement pourraient avoir besoin d'une valeur inférieure à 15 et les cylindres raides ou les cylindres avec un groupe motopropulseur pourraient avoir besoin d'un couple de rectification plus élevé que 15.

Engager la courroie de traversée et traverser complètement vers la gauche en observant le bon dégagement entre la meule et la lame. Observer le bon dégagement entre le doigt d'indexage (après avoir libéré la lame de sa position extrême gauche) et la face avant de la lame sur le déplacement de retour à la position d'accueil. Vérifier également le dégagement au cabestan de support de la lame. Si nécessaire la butée avant peut être ajustée. Voir la figure 25.

Arrêter la traversée à la position d'accueil et vérifier pour le bon index de lame. Le contrôle d'entrainement de la traversée est réglé en usine avec un temps de maintien de deux secondes avant qu'il n'inverse le déplacement du traînard. Ceci est pour laisser le temps au cylindre de tourner et au doigt d'indexation d'attraper la lame suivante. Si nécessaire, le temps de maintien peut être ajusté (se référer à la section d'ajustement du tableau de contrôle du potentiomètre dans le manuel d'assemblage et de service).

Allumer le moteur d'entrainement de la rotation (devrait déjà être allumé) et l'interrupteur du moteur de la meule.

Régler le potentiomètre de vitesse de traversée à la bonne vitesse de rectification. Alimenter doucement la meule jusqu'à ce que vous puissiez rectifier également toute la longueur du cylindre. Une alimentation typique se situe entre ,010 po à ,020 po [0,25 -0,50 mm]. S'assurer d'avoir rectifié toutes les lames avant de poursuivre l'alimentation.

**REMARQUES :** La vitesse de traversée devrait être réglée à approximativement 15 pi/min. Si vous retirez une petite quantité de matériel lors de l'alimentation initiale, une vitesse de traversée plus élevée est suggérée. Si vous retirez une grande quantité de matériel lors de l'alimentation initiale, une vitesse de traversée moindre est suggérée.

Après que la rectification soit complétée mettre tous les interrupteurs à arrêt (il est également bon d'appuyer sur le bouton d'arrêt d'urgence) puis enlever l'unité de coupe de la machine. Faire preuve de prudence car les lames du cylindre seront coupantes.

# TABLEAU DE CONFIGURATION DU CYLINDRE

Note : Ces dimensions varieront selon la position du cylindre dans le cadre, le diamètre du cylindre, la hauteur de la coupe, la position de la roue, etc. Utiliser ces valeurs comme guide seulement.

| MARQUE DU CYLINDRE, MODÈLE ET HAUTEUR DE COUPE | OUTILLAGE AVANT TYPE DE MONTAGE | OUTILLAGE AVANT POSITION DU MONTAGE | DISTANCE DE SÉPARATION DE L'OUTILLAGE | SUPPORT D'ENTRAINEMENT DE ROTATION CÔTÉ D OU G | POSITION DE L'ENTRAÎMENT DE ROTATION | RÉGLAGE DE LA VITESSE DE ROTATION | RÉGLAGE DE COUPLE DE ROTATION | RÉGLAGE DE LA VITESSE DE TRAVERSÉE | NOTES |
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